PACIFIC PULP & PAPER INDUSTRY

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Brubaker Aerial Surveys, Portland

JANUARY 1932

The Weyerhaeuser Timber Company's operations at Longview, Wash., showing the new pulp mill in the foreground, deep water docks, boom, and lumber mill in background.

VOLUME 6
NUMBER 1
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LIQUID CHLORINE

Aerial view of 175-ton bleached sulphite pulp mill—Weyerhaeuser Timber Company, Longview, Washington

ACIDS
ALUMS
ALUMINAS
CAUSTIC SODA
LIQUID CHLORINE
BLEACHING POWDER
GREENLAND KRYOLITH
SODIUM HYPOCHLORITE
AMMONIUM PERSULPHATE

LIQUID CHLORINE produced by the Tacoma Division of the Pennsylvania Salt Manufacturing Company, is contributing toward the advancement of the quality of Pacific Coast bleached sulphite pulp as is now being made by the new mill of the WEYERHAEUSER TIMBER COMPANY at Longview, Washington.

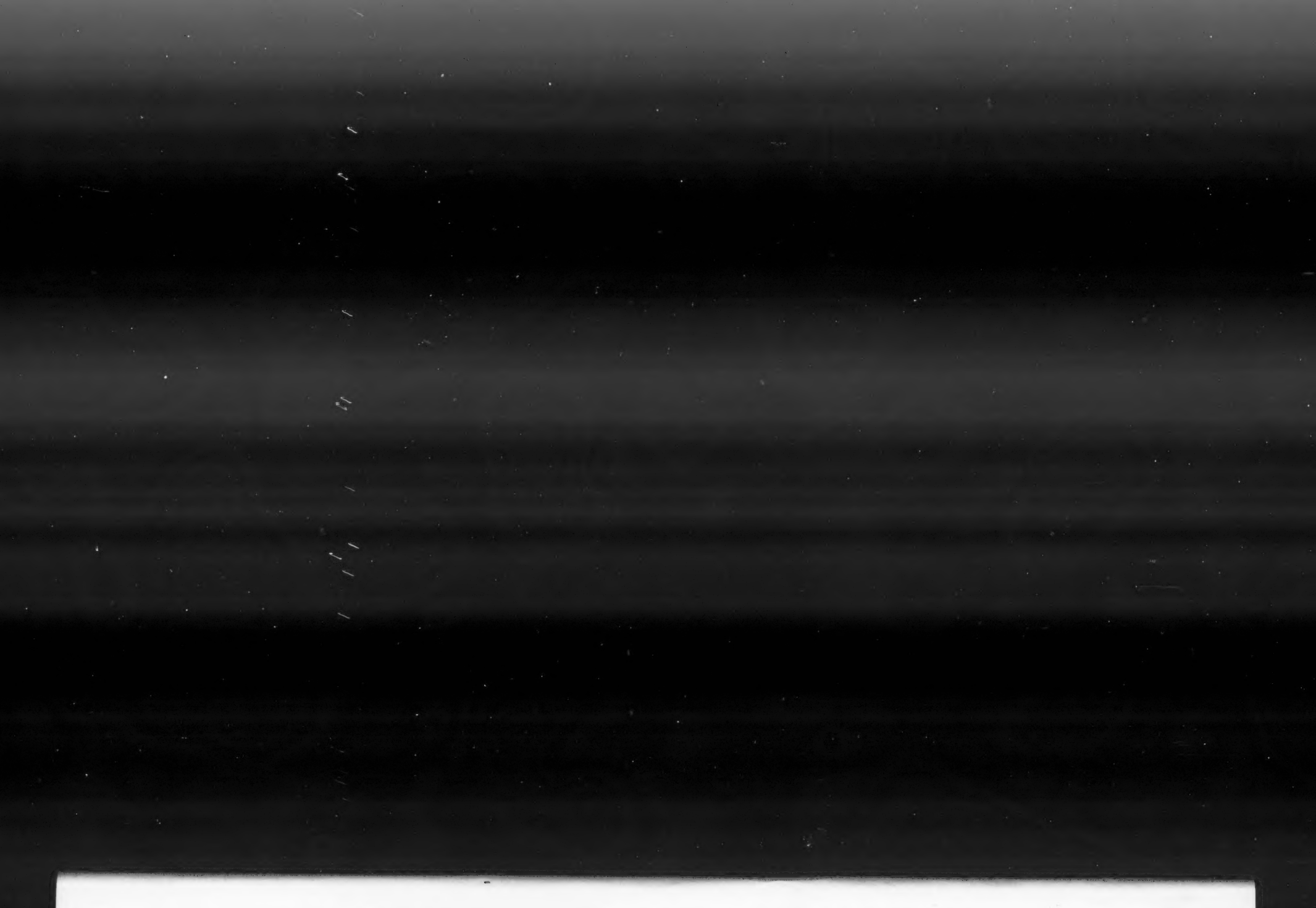
TACOMA ELECTROCHEMICAL COMPANY

Division of

Pennsylvania Salt Manufacturing Company

TACOMA, WASHINGTON

Pacific Pulp & Paper Industry is published once a month—except in March, when publication is semi-monthly—at 71 Columbia St., Seattle, Wash. Subscription: U. S. and Canada, $4.00; other countries, $5.00. Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879.



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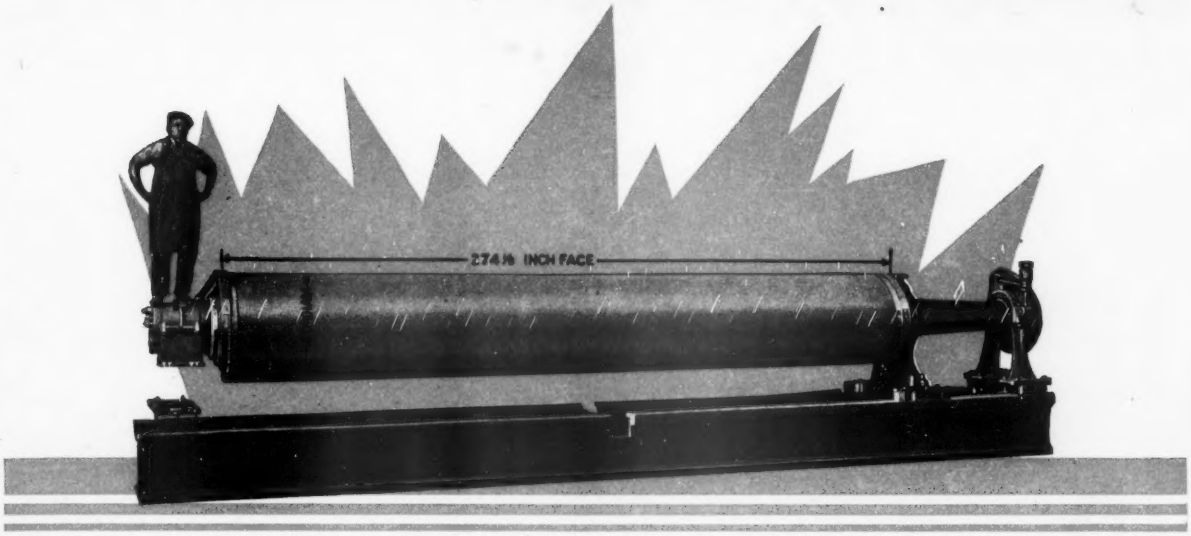

APR 2 6 1954

Örder *for the* Second Roll Has Since Been Given"

ONCE a Beloit Suction Roll, whether Suction Couch or Suction 1st or 2nd press, is installed, the verdict of the user is almost invariably a repeat order. In nearly 200 installations, more than one-third of the rolls are over 200 inches in width. This impressive list of users, representing well-known mills here and abroad, lists the leading makers of bond, book, kraft, news, magazine, toweling, glassine, tissue, cellulose products and specialties. Practically every known grade of paper is made more successfully and economically with modern Beloit Suction Rolls.

Read What Others Say

The comments of many mill executives are shown in our new Suction Roll Manual. Send for a copy of this valuable book. It is sent free, without cost or obligation to you. Learn more about this modern development in papermaking progress.

The *Beloit* Way is the *Modern* Way

BELOIT IRON WORKS, BELOIT, WIS., U. S. A.

The BELOIT

Weyerhaeuser adopts Chemipulp Process

for Quality and Uniformity

The CHEMIPULP system installed in the new Weyerhaeuser Timber Company's sulphite mill at Longview is the seventeenth mill to start into operation in the United States and Canada and brings the total sulphite pulp now produced by the CHEMIPULP methods to over 600,000 tons annually.

It is not the mere number of tons produced annually that is of prime importance but the QUALITY and UNIFORMITY of the product that are of paramount importance and all CHEMIPULP installations have shown a marked improvement in the QUALITY and UNIFORMITY of the pulp produced. This improvement in QUALITY and UNIFORMITY is reflected in the final product made from the pulp and in addition, assures lower cost of converting the pulp into paper. We have the direct testimony of paper makers to the effect that the improved QUALITY and UNIFORMITY has enabled them to run more steadily at a higher machine speed and to produce a better final product than they were ever able to accomplish when using pulp cooked by the cold acid process.

All grades of paper manufactured are now being made from pulp produced by the CHEMIPULP PROCESS and in addition a considerable tonnage of pulp produced for rayon is now being shipped daily.

Bleach consumption is reduced and at the same time, Mullen, Tear and Fold are increased.

It has been demonstrated that a much broader market is available to all plants producing pulp by the CHEMIPULP PROCESS.

Broadly protected by patents in the North American continent and in Europe.

We have an interesting and pertinent story on CHEMIPULP performance—substantiated by facts and figures that is well worth your consideration—write for it.

CHEMIPULP PROCESS, INC.

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Pacific Coast Office
1017 White Bldg.
Seattle, Wash.

Canadian Agency
319 Castle Bldg.
Montreal, Que.

Hardy Chrome-Nickel STEEL VALVES

RECENTLY INSTALLED IN THE NEW PULP DIVISION

OF THE

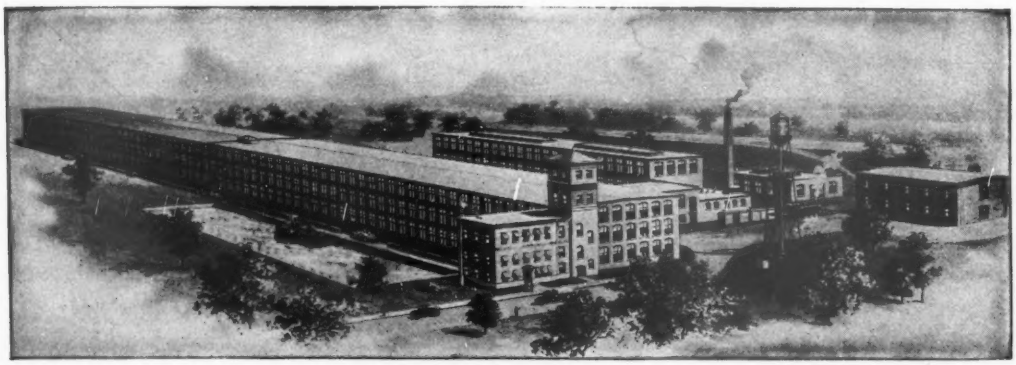
WEYERHAEUSER TIMBER CO.

AT

LONGVIEW, WASHINGTON

WILLIAM A. HARDY & SONS CO.

Founded 1850 **Fitchburg, Mass., U. S. A.** **Incorporated 1902**



THE HOME OF ALBANY FELTS

PULP FELTS

While new developments in paper machines have been advancing at a rapid pace, machine builders have not overlooked any opportunity to improve pulp equipment.

Albany has kept in close touch with every new development and constant study has led to the perfection of all sorts of felt designs for use on every type of pulp-making machine.

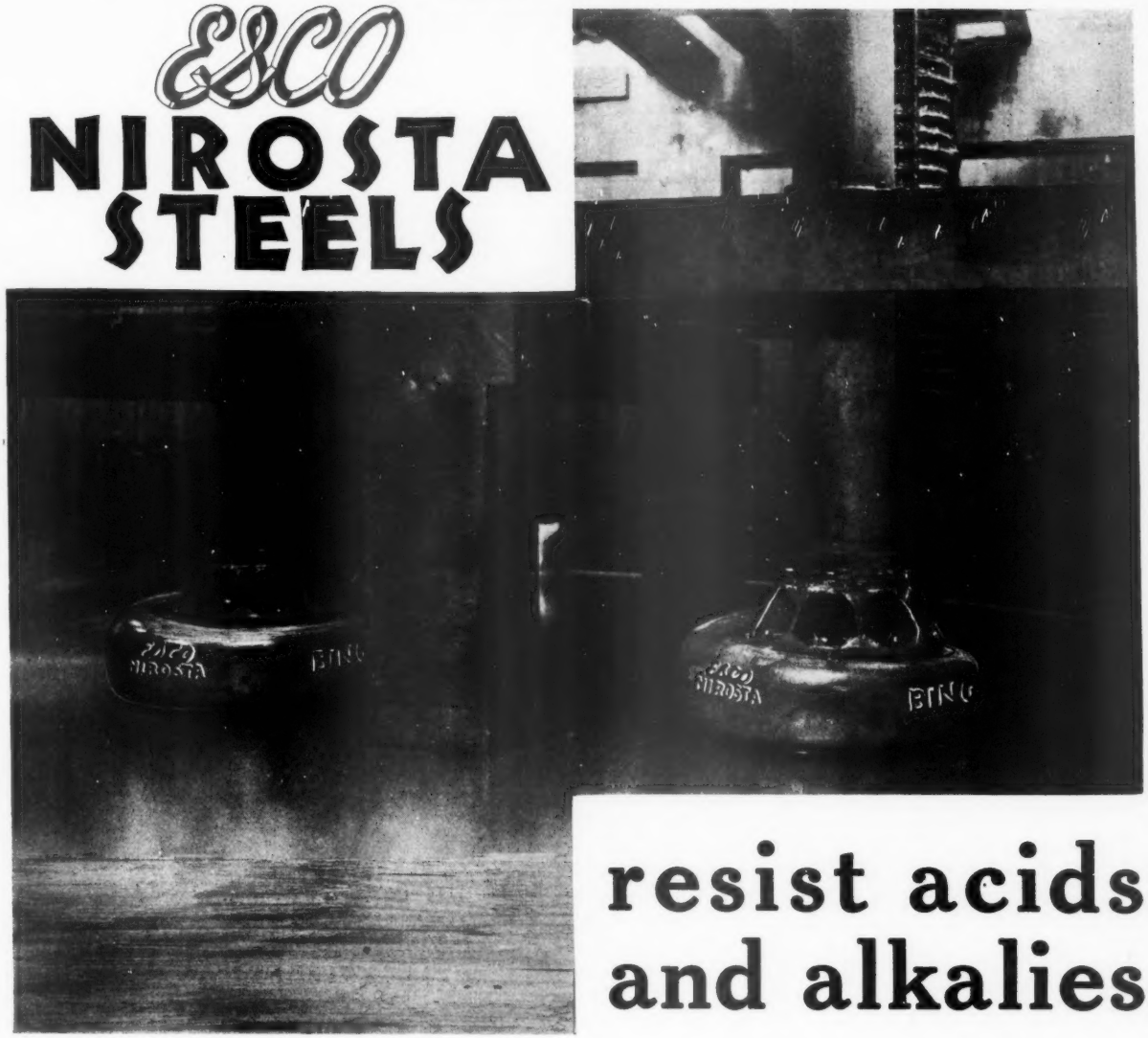
Special designs for dry machines . . . for Rogers machines . . . for ordinary wet machines . . . for Kamyr machines.

If you are interested in improved felt-life and water-removal on your pulp machines, we suggest that you give us the opportunity of demonstrating what we can do for you.

ALBANY FELT COMPANY

ALBANY NEW YORK

ESCO NIROSTA STEELS



resist acids and alkalies

consult with our metallurgical and engineering departments

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24th and York Streets

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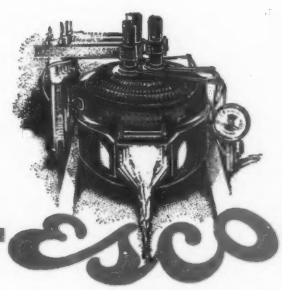

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PAPER MILL MACHINERY

FOURDRINIER—CYLINDER—WET MACHINES

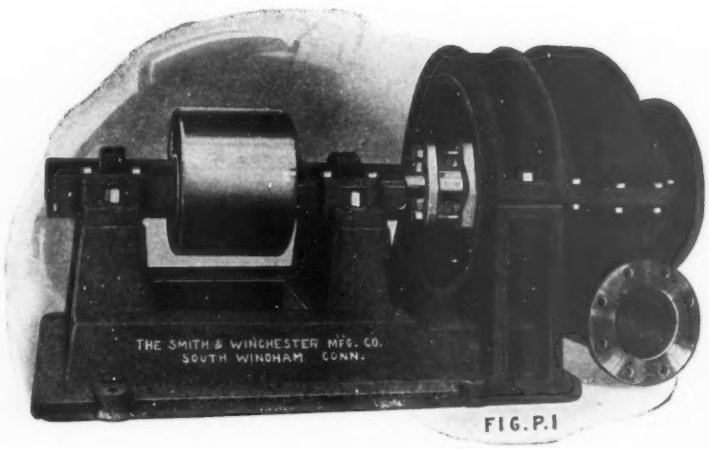
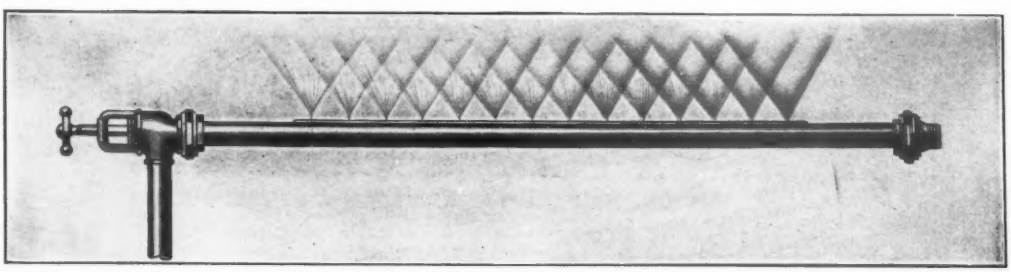


FIG. P.1

The Undercut Trimmer

PAPER BAG MAKING MACHINERY



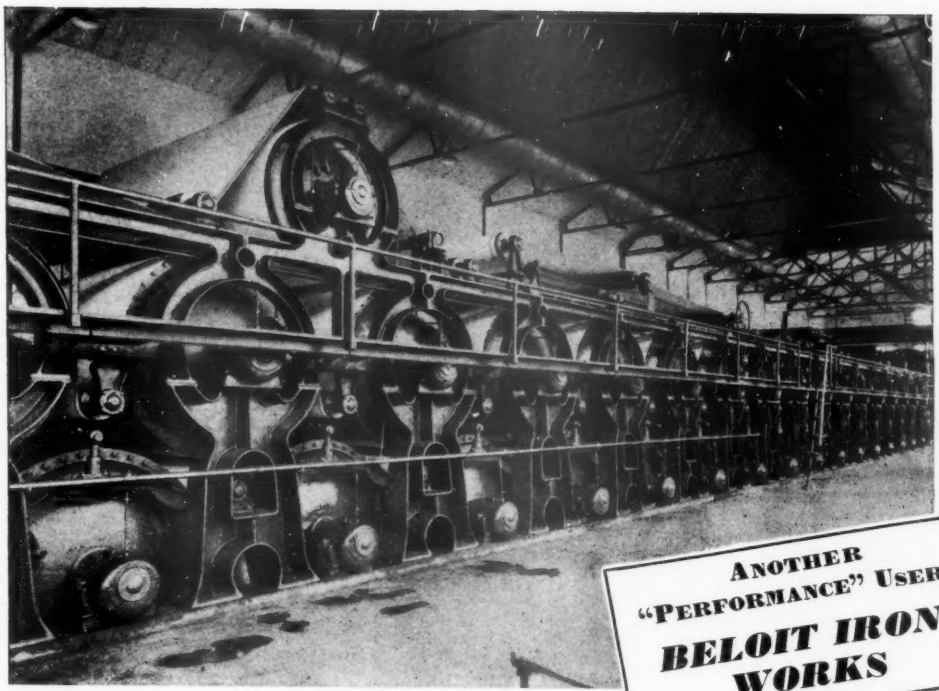
The Rainstorm Shower Pipe

—ESTABLISHED 1828—

The Smith & Winchester Mfg. Co.

Dept. MFP. SOUTH WINDHAM, CONN.

1,000 FEET or BETTER ON SKF BEARINGS
FOR EIGHT YEARS!



ANOTHER "PERFORMANCE" USER
BELOIT IRON WORKS

WHERE PERFORMANCE TAKES PREFERENCE OVER PRICE

Eight years of dependability...continuously operated at 1,000 feet or better... a record that tells the story of why SKF Performance Takes Preference Over Price on this dryer section of a Beloit machine in a large paper mill. And there's more than the eye can see in the picture for the table rolls and wet felt rolls are also SKF equipped.

Such dependability is hard to visualize in cold words but it looms up mighty big when cost and production records are scanned. The conclusion is inevitable... SKF smoothness of operation long life, freedom from adjustment and minimum maintenance are definite factors in assuring profitable production at the lowest cost per bearing hour.

2809

● *You may buy a bearing as a bargain but try and get a bargain out of using it, for nothing is apt to cost so much as a bearing that cost so little.*

SKF INDUSTRIES, INC. 40 EAST 34th STREET, NEW YORK, N. Y.

SKF

Ball and Roller Bearings

When writing S. K. F. INDUSTRIES OF CALIF., *please mention* PACIFIC PULP AND PAPER INDUSTRY.

WILLIAMS STANDARD PAPER MOISTURE TESTER

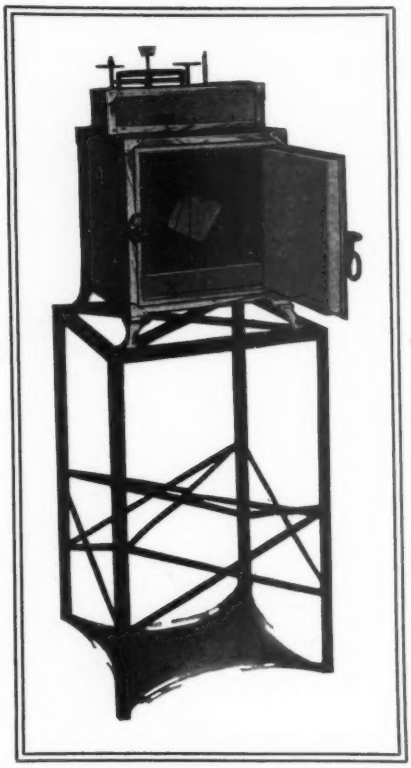
An Accurate Moisture Test of Your Paper in Ten Minutes

One Paper Company Has Bought 21 for Their Various Mills

Moisture tests can be made in your Machine Room by your Machine Tenders.

No calculations required. Accurate to .1 of 1%.

Tests all kinds of paper from tissue to board.



Hot samples weighed without removal from oven. No chance for moisture absorption during weighing.

Double-walled electric drying oven, with thermostat control.

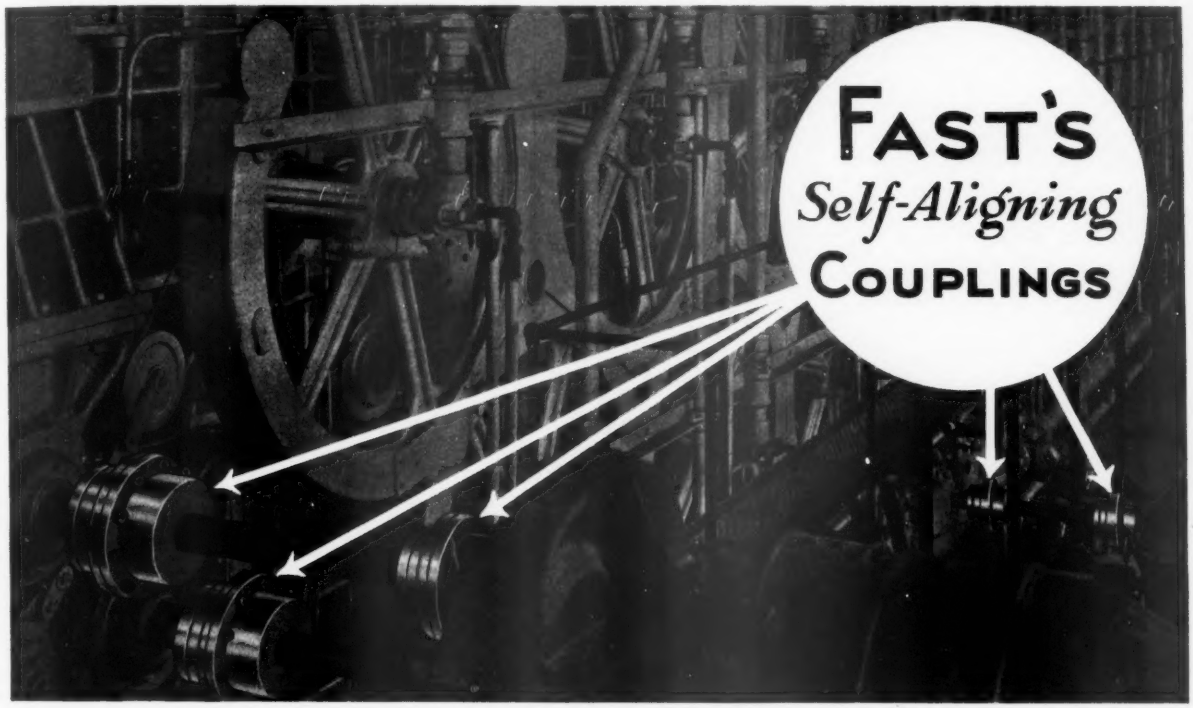
Accurate scales with non-rusting agate bearings and beam graduated to read percent moisture directly.

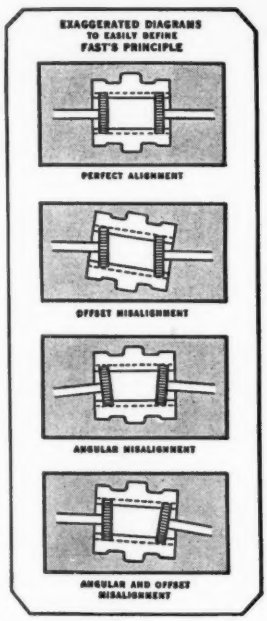
Over-dried Paper Costs You More Dollars Per Ton and Dissatisfied Customers

WILLIAMS APPARATUS COMPANY

WATERTOWN, N. Y.

Close-up of rear side of Minton Vacuum Dryer Section in machine room. Fast's Self-Aligning Couplings are used of course. No coupling shut-downs here. No time lost for this Weyerhaeuser Mill.





No Coupling Shut-Downs
for Weyerhaeuser's New Mill

Fast's Couplings do away with Perishable Lacings, Pins, Bushings, Springs, Discs, and Grids.

Isn't it easy to see that by doing away with all flexible materials, you banish the danger of coupling shut-downs? That by eliminating all flexible lacings, pins, bushings, springs, discs, and grids you run no danger of failure of materials, making it possible for your couplings to run for years, with no more attention than a periodic oiling?

Note the diagrams. A spur gear on each shaft end. A floating sleeve, with internal gear teeth meshing with the spur gears. When one shaft turns, the sleeve turns, the other shaft turns, and all misalignment is taken up between the lubricated faces of the gear teeth.

Obviously, there is nothing to break down. No flexible materials to fail and be replaced. No shut-downs for coupling repairs, now, next week, next month, next year — or at any time.

Our free pamphlet, "Solving Coupling Problems in Paper Mills" shows complete details for all types of couplings which are eliminating shut-downs on all types of mill drives. Mail the coupon for it today.

The Jordan Coupling

In the free pamphlet is shown Fast's Jordan Coupling, based on the "no flexible materials" principle and built to provide 12 inches of plug adjustment by merely releasing four draw-bolts. Do not fail to send for the free pamphlet.

FAST'S
Self-Aligning
COUPLING

GET FREE PAMPHLET

The Bartlett Hayward Company
213 Scott Street • • Baltimore, Md.

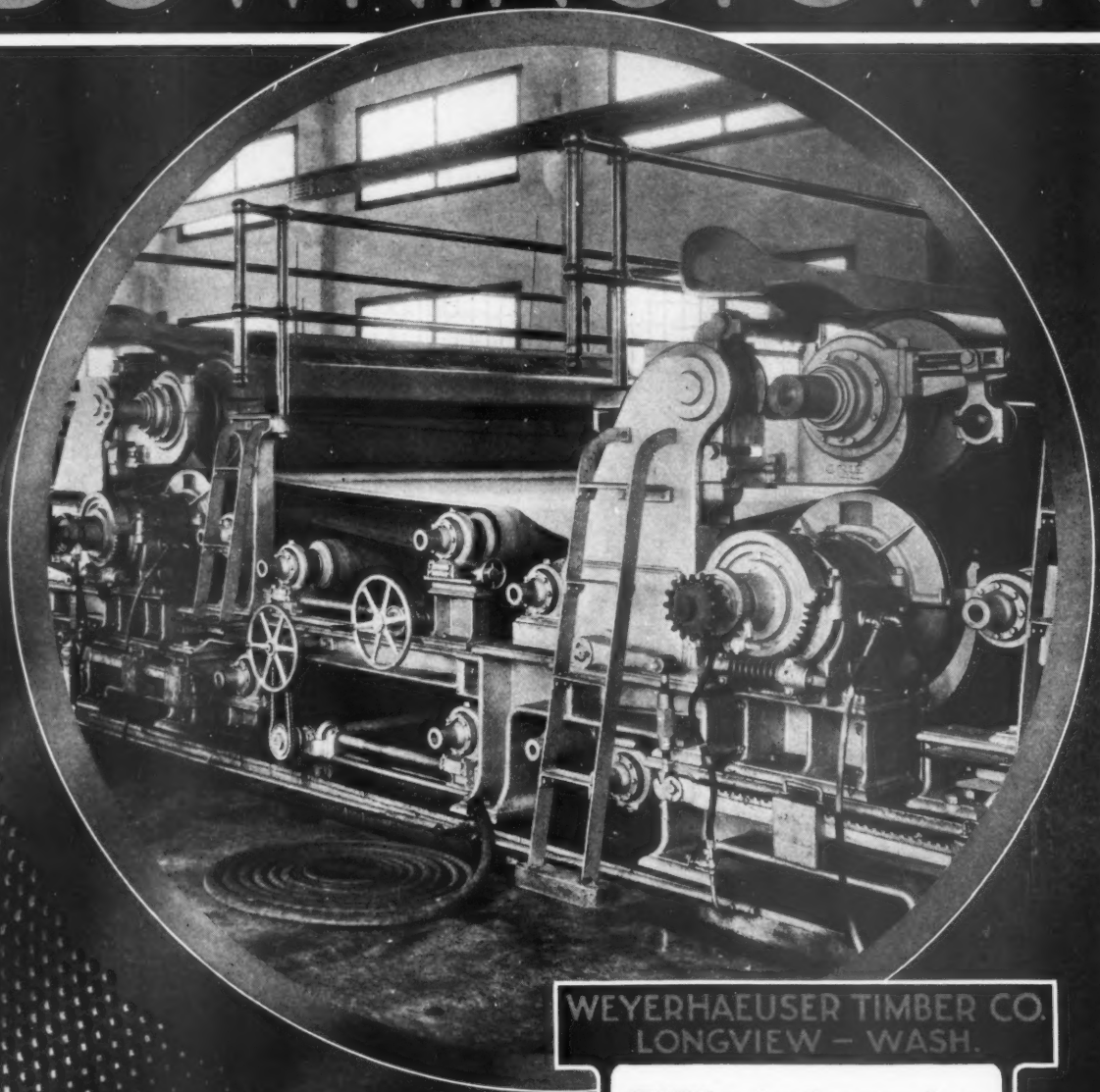
Please send me the free pamphlet on "Solving Coupling Problems in Paper Mills".

Name .....

Name of Mill .....

Address .....

DOWNINGTOWN



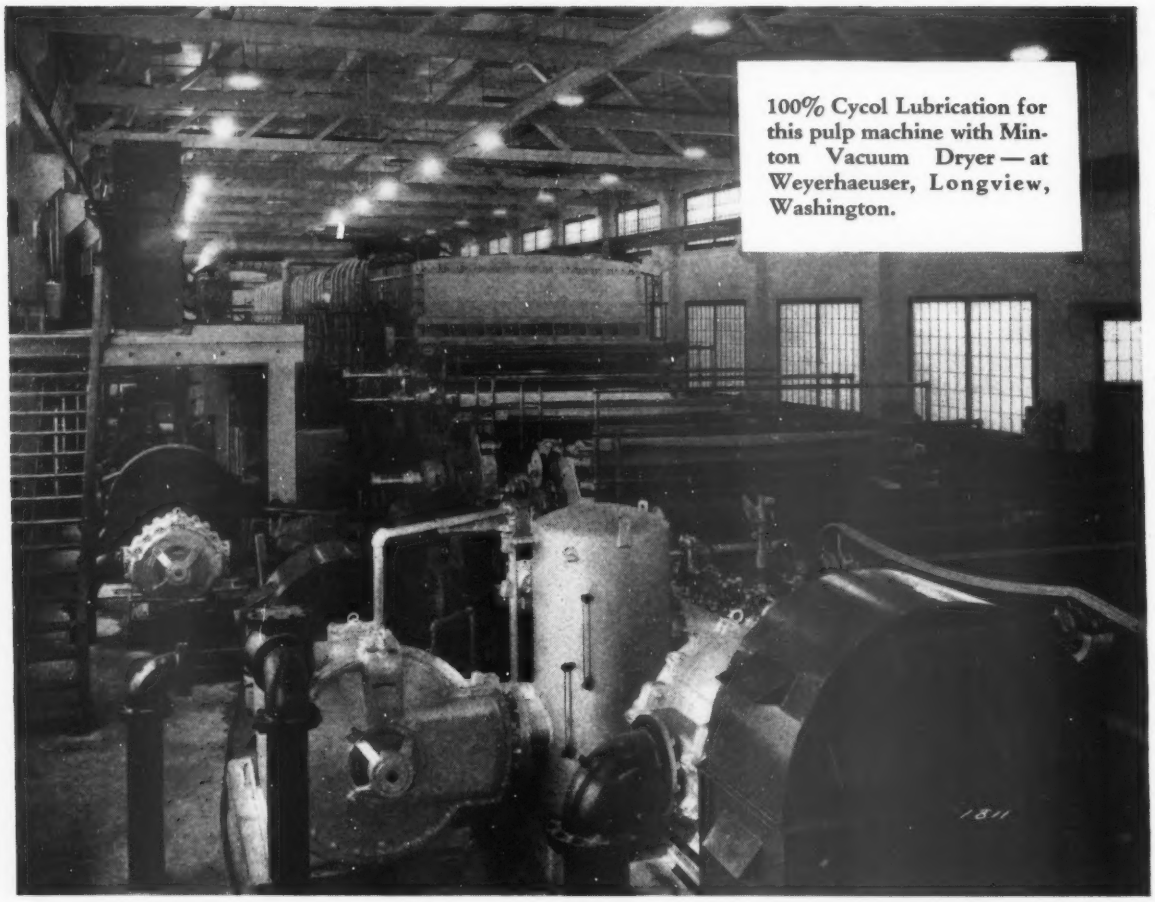
WEYERHAEUSER TIMBER CO.
LONGVIEW – WASH.

THERE are three Downingtown Suction Rolls on this machine, a 30-inch couch, a 28-inch first press, and a 28-inch second press. These rolls have direct drive and rear end suction ⁂ The rear end suction simplifies the piping and eliminates the necessity of breaking and re-making joints in vacuum piping when putting on clothing ⁂ The rolls are fitted with trouble-proof, self-aligning, ring-oiling, water-cooled, anti-friction journal type bearings. The Downingtown Mfg. Co., Downingtown, Pa.

To Weyerhaeuser Timber Company
and Mr. O. C. Schoenwerk we
publicly express our sincere
thanks for their splendid
cooperation during the
installation of sixty thousand
square feet of Stebbins
guaranteed linings.

We appreciate their recognition
of Semco quality, which surely
is a glowing tribute to both
the materials and workmanship.

STEBBINS
Engineering
& Manufacturing
Company



100% Cycol Lubrication for this pulp machine with Minton Vacuum Dryer — at Weyerhaeuser, Longview, Washington.

Weyerhaeuser specifies CYCOL for dependable lubrication at "LOWEST SERVICE COST"

IF you're an engineer, you laugh at advertising phrases not backed by conclusive proof. Yet we say to you, Cycol lubrication gives Highest Efficiency at Lowest Service Cost — for Cycol proves it.

On our own special bearing machine we tested 45 competitive oils sold on the Pacific Coast. 10,000 hours of grueling trials at searing speed and in scorching heat. These are the results—the work values indicated:

CYCOL	EASTERN OILS
96%	87%

OTHER WESTERN
73%

Then we divided the retail price of each oil by its work value. That gave us the "service cost" of each; here they are—

CYCOL	EASTERN OILS
$1.04	$1.63

OTHER WESTERN
$1.37

There's the simple answer to lubrication efficiency. This is why the nation's biggest buyers specify Cycol. They have proved Cycol's "Lowest Service Cost" for themselves.

Whatever your lubrication problem, Cycol commands your preference. We will appreciate your discussing your problems with the Associated representative when he calls.

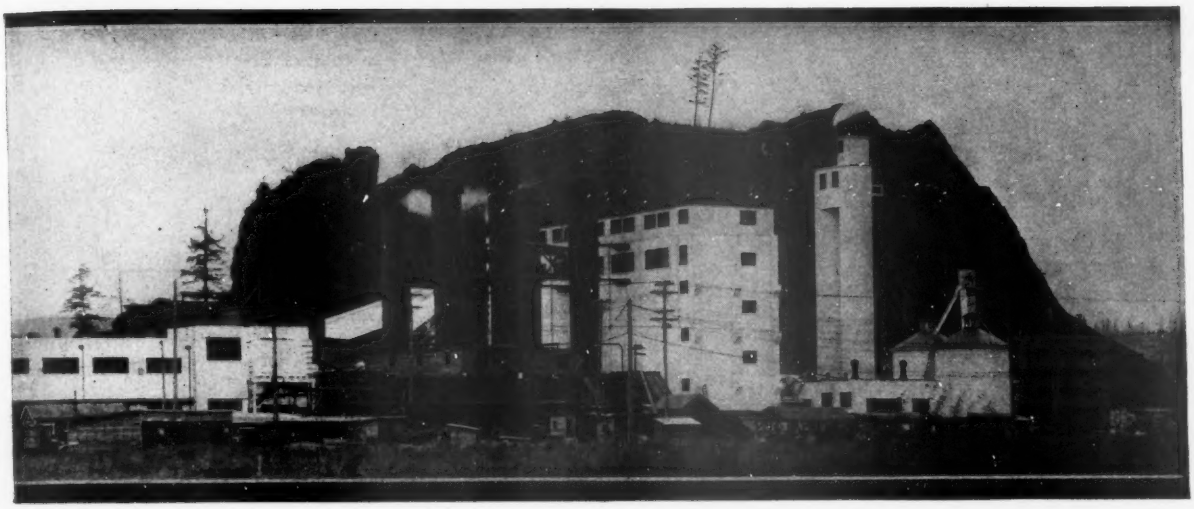
EDELEANU-TREATED

Cycol is treated with liquid sulphur dioxide, though most refiners use sulphuric acid. Sulphur dioxide is a solvent. It removes all undesirable materials without any chemical action on the oil. That's why you get all lubrication with Cycol.

ASSOCIATED OIL COMPANY

Refiner and Marketer of Cycol Motor Oils and Greases, Avon Industrial Lubricants and other "Sustained Quality" petroleum products.

CYCOL MOTOR OIL
"Lowest Service Cost"



In the New Weyerhaeuser Mill—

Six Oliver United Filters are installed . . . .

Sulphite bleach washing, re-washing and thickening, are performed on Oliver United Filters in the fine new mill of the Weyerhaeuser Timber Co., at Longview, Wash. The equipment includes three 8′1″ x 16′ Oliver Sulphite bleach washers, one 8′1″ x 16′ Oliver Re-Washer, and two 6′ by 10′ Oliver high density Thickeners. These units were selected on their records of performance in more than one hundred mills in the United States and Canada.

Used as Thickeners, Washers, Deckers, Save-Alls or as combination units Oliver United Filters offer you the advantages of low installation costs, small floor space requirements per unit of capacity, low operating costs, and high recovery of chemicals and fibre. Mills operating Oliver United units are making an aggregate savings of many thousands of dollars every day. Oliver Uniteds will help you to cut costs during the coming year.

Write for Bulletin No. 201

OLIVER UNITED FILTERS INC.

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FACTORIES: Oakland, Cal., Hazleton, Pa., Peterboro, England. Cable Address: OLIUNIFILT

FILTERED ACID

CONTRIBUTES TO WEYERHAEUSER'S CLEAN PULP

To insure the production of the cleanest possible pulp, the WEYERHAEUSER TIMBER COMPANY has overlooked no detail of design and equipment which will eliminate dirt.

All acid is carefully filtered prior to being used for cooking, by passing it through a large capacity specially designed filter. Dirt picked up from the lime rock is entirely removed and the acid goes to the digester absolutely free from all foreign matter.

The acid making system is the latest JENSSEN TWO-TOWER design, modern and efficient in every detail.

G. D. JENSSEN CO.

4005 Chrysler Bldg., New York City **1017 White Building, Seattle**

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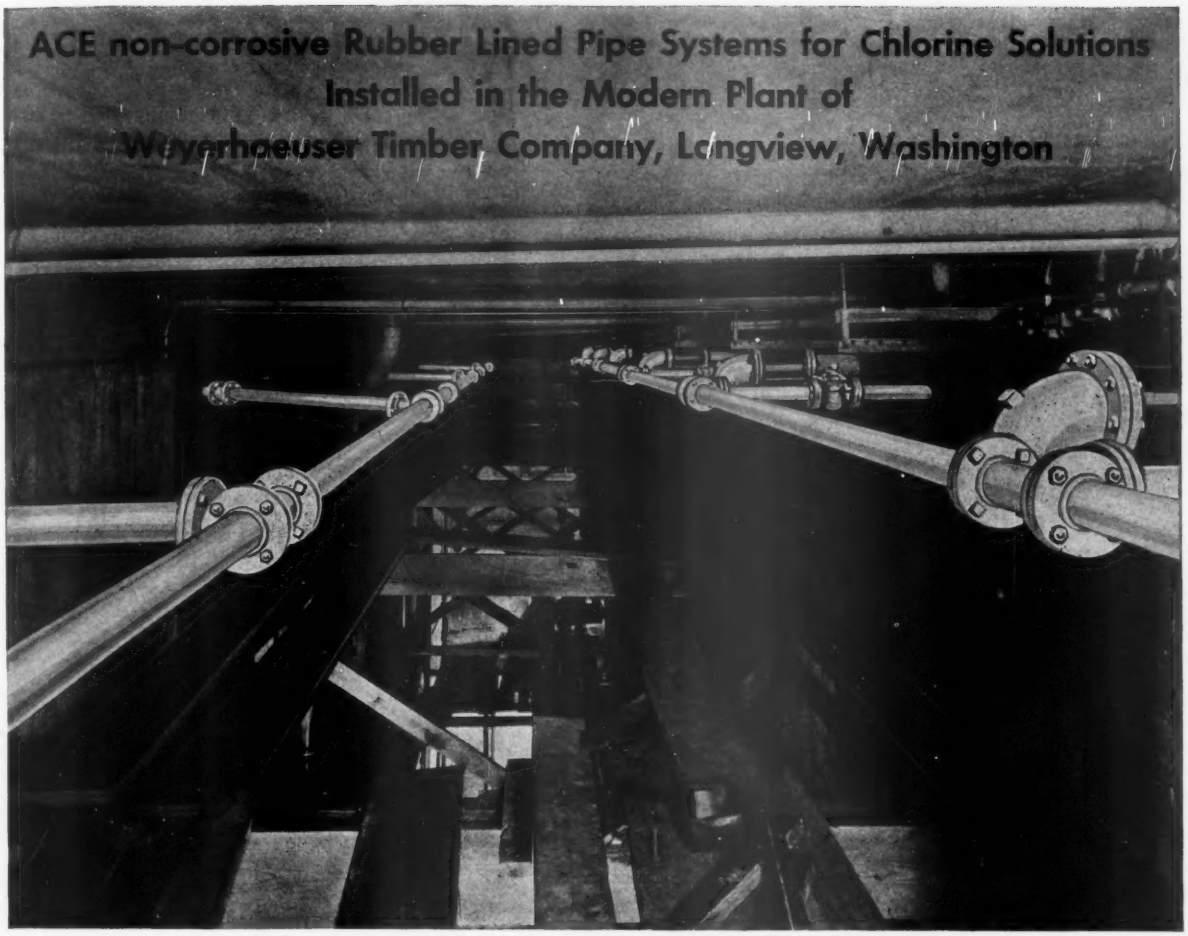
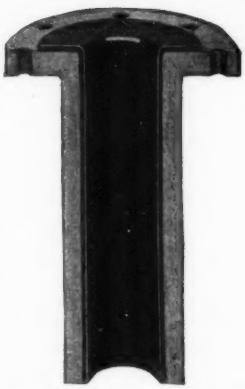

ACE non-corrosive Rubber Lined Pipe Systems for Chlorine Solutions
Installed in the Modern Plant of
Weyerhaeuser Timber Company, Longview, Washington

Installation view of Ace rubber lined pipe for conveying chlorine solutions from storage to vats



Sectional view of piece of Ace rubber lined pipe. Note how all inside surfaces are completely protected.

THE Weyerhaeuser Timber Company's new 175-ton sulphite pulp mill, commencing operations the first of November at Longview, Washington, is a major development in the pulp and paper industry this year.

Ace hard rubber lined pipe, valves, fittings, pumps, tanks, and other equipment, are *major developments in operating economies,* providing complete protection against corrosion from active solutions wherever such problems arise in the Chemical Process Industries. Our engineers will gladly advise whether your particular corrosion problem can be met with ACE Rubber Protection. Catalogue on request.

ACE HARD RUBBER Prevents Corrosion

AMERICAN HARD RUBBER COMPANY

11 MERCER STREET, NEW YORK, N. Y.

AKRON, OHIO—111 WEST WASHINGTON STREET, CHICAGO, ILLINOIS

When writing AMERICAN HARD RUBBER CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY

175 Ton Sulphite Pulp Drying Machine Now in Operation at Weyerhaeuser Timber Company, Longview, Washington

FOURDRINIER PART, two Suction presses and Minton Vacuum Dryer* producing clean, strong, high-grade Sulphite Pulp.

This huge machine—weight 1,840,000 pounds—was shipped from the nearby Port of Boston, through the Panama Canal, to the Weyerhaeuser dock at Longview, at a surprisingly low transportation cost.

*Constantly alert for new ideas, Rice, Barton & Fales are licensed builders for Minton Vacuum Dryer Corporation, Greenwich, Connecticut, licensors.

RICE, BARTON & FALES
INCORPORATED
WORCESTER, MASSACHUSETTS, U. S. A.
Paper Making Machinery Since 1837

Published by the Consolidated Publishing Co., in Seattle, U.S.A., on the 15th of each month—semi-monthly in March.

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What do you know about the vast Western industries which manufacture products, other than pulp and paper, from our forest raw materials?

Complete your picture now. Tear out this advertisement and mail it to us with your name and address. You will receive a sample copy of the only Western woodworking journal, together with a subscription offer.

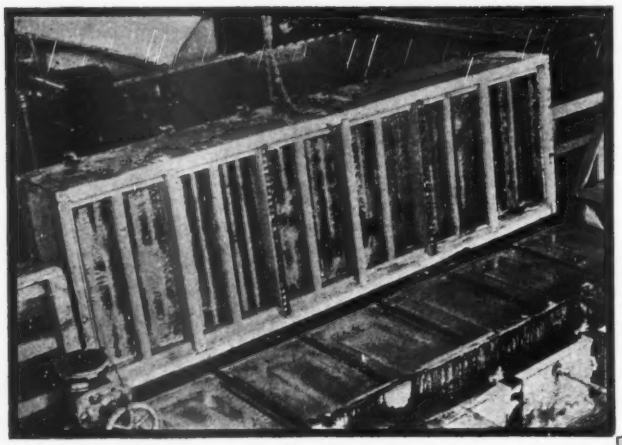
Western Wood Worker & Furniture Manufacturer
71 Columbia St., Seattle, Wash.

THE BACKGROUND OF PULP AND PAPER

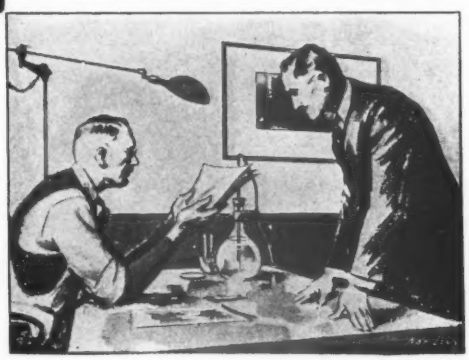
Every pulp and paper mill man who looks beyond the chipper and pulpwood pile, finds a most important field of vision. Forests, lumber, these form the background of pulp and paper.

Keeping apace of developments in the lumbering field, as directly affecting your business, is well worth while. This can best be done by reading the leading lumber journal, West Coast Lumberman, each month. Subscription, $3.50 per year, including the Annual Review. Foreign, $4.00.

WEST COAST LUMBERMAN
71 Columbia St. Seattle, Wash.



REQUIREMENTS OF CHLORAMINES FOR SLIME CONTROL...



SLIME ELIMINATION presents a different set of problems in every mill, with consequent variations in the requirements of chloramines. These requirements will depend upon (1) condition of the water supply, (2) kind of pulp, and (3) type of slime organisms.

When the raw water supply is high in organic content, it is sometimes desirable to apply chloramines ahead of the settling basin, to prevent the entrance of new slime bacteria to the system. This requires relatively large dosages. Conditions in the mill may make it more economical to apply the chlorine and ammonia between the settling basin and the filters, or after filtration, or to apply the chlorine at one point and the ammonia further along the line. The Great Western Laboratories are prepared to make suggestions as to experimental dosages which will give a sound basis for accurate determination of the exact procedure and dosage in each mill.

Only a consideration of all the factors involved, as they exist in a particular mill, make accurate diagnosis for effective slime control possible. Experiments have been carried out at the Great Western plant, and are now being conducted by Great Western Electro-Chemical Co. engineers under actual mill conditions, which enable us to give constructive assistance on chloramine application. We shall welcome opportunities to advise on the problems of slime control and use of chloramines, and invite inquiries as to initial experiments and final installations.

GREAT WESTERN
ELECTRO-CHEMICAL CO.

9 MAIN STREET, SAN FRANCISCO
PLANT: PITTSBURG, CALIFORNIA
SEATTLE . . . . LOS ANGELES

Sacrifice Domestic Industries?

¶ The United States government must either support or repudiate American industry.

¶ If it is willing to permit domestic manufacturers to be prostrated in their own home market by foreign competition aided by the insidious commercial weapon of depreciated currency, then the government must expect the elimination of American industries as a source of revenue.

¶ If the government is to maintain the allegiance of its one hundred twenty millions of citizens it must protect the opportunity for making a livelihood. Industry provides the payroll opportunities. An influx of commodities of foreign origin is equivalent to an export of payrolls.

¶ Foreign interests have been permitted to exert their influence thru finance into government circles even into the Halls of Congress. Their testimony has been admitted at hearings and allowed to sway government opinion to place the welfare of foreign industries above that of domestic industries.

¶ The chimera of foreign trade and unpaid foreign debts, negligible with respect to domestic commerce in the first instance, and sadly doubtful in the second instance, have been permitted to cloud the issue. The two are not worth the sacrifice of domestic industry.

¶ The problem is not regional. It is not a problem confined to the pulp and paper industry. It is a national problem of all industry, a government problem, a problem of employment, of national revenue, of law and order.

¶ The pulp and paper industry of the United States lies fully exposed to the inroads of foreign competition in its home market. It provides a cross section for study of the national predicament. Domestic producers of pulp and news print bear the first shock in competition with the flood of duty-free commodities, but the chaotic market conditions developed here serve to undermine the stability of the entire paper industry.

¶ The inequitable conditions imposed upon mills engaged in the manufacture of duty-free items raises the question of how long we are to endure the farce of tariff protection extended only to a portion of the industry.

¶ Continuation of competition in the domestic market with depreciated foreign currencies will mean elimination of vulnerable parts of the industry, an increased dependency of the tariff-protected parts of the industry upon foreign sources, the disappearance of a valuable payroll from the United States, higher prices for paper and a decrease in consumption.

¶ The effects of competition with depreciated exchange are now generally realized by all parts of the industry. The need for equalization is recognized. The necessity for quick action is obvious.

¶ The power of relief is with Congress. The danger lies in the probability of many scattered appeals, each urgent and similar, but serving only to confuse Congress. There must be coordination and concentration upon a single, simple, and broad program of relief which can find sufficient support to permit quick enactment.

¶ What is most encouraging is that that coordination within the industry is making definite headway.

COMPLEMENTARY NATURE of PULP and LUMBER INDUSTRIES

By F. R. TITCOMB
General Manager Weyerhaeuser Timber Company

WHY did the Weyerhaeuser Timber Company undertake the manufacture of chemical wood pulp? An adequate answer to this question requires some explanation. The decision to supplement the company's existing functions of timber ownership, logging, and milling with a complicated chemical process was arrived at only after careful deliberation and consideration of many factors.

Analysis of the problem leading to the action taken began at the stump. As a large owner of timber the company was naturally interested in securing the maximum financial return from the forest crops under its control. To secure such results two major lines of approach were open; first, efficiency in every operation, from removal of the timber to consignment of the manufactured product to the consumer; second, greatest possible utilization of the forest growth and its conversion into marketable commodities.

As loggers and lumber manufacturers of considerable experience it might be assumed that, with respect to the first point, efficiency was at least on a parity with others engaged in the ordinary activities of the industry. In the second instance there appeared to be an opportunity for considerable improvement over customary procedure. Everyone conversant with West Coast logging conditions knows the considerable quantity of sound wood that is necessarily left on the ground in the course of normal operations. This material, often referred to as waste, is not the result of willful whim of the logger but its removal, or otherwise, is purely a question of economics. The logger, under present day conditions, has no profitable outlet for a large part of the material making up a forest; even tho nature may have expended many years in building up the large volume of wood contained in certain kinds of trees and parts of trees having no ordinarily accepted market value.

Until this company's entry into the pulp field its manufacturing operations have been confined very largely to reclaiming values that required retention of the mechanical structure of the tree. However, after due investigation it was believed advisable to depart somewhat from former practices. Western Hemlock, which constituted a considerable part of the material being left in the woods, had already demonstrated its highly desirable qualities as a pulp wood. Its acceptance and popularity in the domestic markets was steadily growing. Pulp, therefore, apparently offered an outlet for a considerable amount of Western Hemlock which, because of quality, or an over-supply, could not be marketed profitably. Here was a market not concerned with the ordinary mechanical structure of the tree but rather required breaking down this structure into its smaller elements, wood fibre.

What we, as timber owners, were primarily interested in was the conversion of as many trees as possible in a given stand and as large a part of each tree as possible into a commercial asset. Pulp manufacture appeared to present an excellent supplement to our existing operations as a means of closer utilization of our standing timber.

It will readily be seen that ability to use an added amount of our West Coast forest growth adds to the community value of these forests and opens up new possibilities in numerous directions. During the past half dozen years the pulp industry has made very definite progress on the West Coast and the manufacture of pulp has had opportunity to demonstrate itself as in every way complementary to the logging and lumbering industries. Closer utilization of the forest stand is a matter of real importance to our section of the country. It not only means extending the life of our forests but adding to their usefulness and ability to maintain payrolls, as well as being a factor in fire control, which in turn should have a direct bearing on reforestation activities.

In addition closer utilization and development of added industries will no doubt in time bring about a more thoro realization of the value of forest industries to a community and eventually result in necessary legislative changes with respect to timber ownership and operation of forest industries. Such changes can and will give greater stability to these industries.

The highly unsatisfactory nature of our laws governing taxation of standing timber is a familiar problem to foresters and economists as well as those whose immediate livelihood is associated with forest ownership. Pressure of mounting taxation has been one of the chief agencies in forcing premature liquidation of timber assets. It has been chiefly responsible for the reversion to public ownership thru nonpayment of taxes of many thousands of acres of cut-over and burned-over lands. The incentive to carry forward any reforestation program looking to perpetual timber cropping is also sadly discouraged by reason of excessive carrying costs, and this is, fortunately, being recognized thru rather widespread attempts to modify our tax laws as they apply to reforesting areas.

The growth of the pulp industry in the Northwest, to my mind, holds out considerable new hope for stumpage owners of this region. Due to the comparatively heavy and permanent character of investments

Photo by Blank-Stoller Inc.

Key personnel, Pulp Division, Weyerhaeuser Timber Company. Upper left, R. B. Wolf, manager. Upper right, B. T. Larrabee, superintendent. Lower left, Ralph Hansen, technical director .Lower right, Norman Kelly, assistant superintendent.

in plant, the pulp industry should be one of relative stability. Closely allied as it is with the lumber industry it will, without doubt, exert upon this industry a stabilizing influence and permit the building of more permanent communities and payrolls.

From a reforestation standpoint production of pulp wood as compared with material for the better grades of lumber will prove comparatively easy and less expensive and it is entirely possible that time will bring about changes in exploitation methods which will fit into the picture, production of both pulp and saw log material, each on areas best suited to the growing of these crops.

There is no conflict between the pulp and lumber industries. On the contrary each can be of the greatest service to the other, and it will doubtless often prove highly desirable that they be carried forward under one management.

A FLOW DESCRIPTION of the NEW MILL

SCIENCE never ceases its contributions to the technique of pulp and paper manufacturing. The more recent years have witnessed extraordinary strides in the practice of the industry. Something new, significant, and of interest seems always coming over the horizon. So rapid are developments brought about by the vast army of chemists, technicians and engineers who are constantly applying themselves to the problems of the industry that, with the building of each mill, the question is raised, "What's new about this one?"

In the case of the 175-ton high grade bleached sulphite pulp mill of the Weyerhaeuser Timber Company at Longview, Washington, there is much to interest the man with a technical turn of mind. Many departures have been made from conventional practice. Unusually rigid specifications have been made to secure exact control of the process. It will be the primary purpose of the several related articles in this issue to emphasize particularly points of interest to the practical pulp manufacturer.

That there may be better understanding of the "reason why" back of many of the features of design the economic background of the new mill must be sketched in with a few bold strokes.

The Weyerhaeuser Timber Company is ranked as the foremost timber holder, logger and sawmill operator on the Pacific Coast. Until the building of the Longview pulp mill the company had confined itself to conversion of its forest output into commercial goods produced solely by mechanical means. For many years, however, it has been interested in research, inquiring into other outlets for profitable conversion of timber on the stump into marketable items.

The company's large timber holdings include a great amount of Western Hemlock, particularly is this true of the vast amount of timber set aside for its Longview operations. Altho the company has in the past manufactured its Western Hemlock into high grade and desirable lumber, and expects to continue doing this to a considerable extent, it sought a still greater utilization of this great natural resource. It was, therefore, a natural turn of events that chemical conversion, as well as mechanical conversion, of Western Hemlock into marketable produce should offer itself as a solution to the problem. There was the further advantage held out in the possible economies that would be effected in dovetailing the operations of logging, lumber milling, and pulp manufacturing.

The actual building of the pulp mill can be likened to the design of a machine for a specific function. Its job was to convert these raw Western Hemlock logs into the highest quality bleached sulphite pulp in the most efficient and economical manner. To accomplish that end the machine must be equipped with every aid offered by the developments of science. Here must be a mill that could take in a log at one end, put it thru the ramifications of the pulp manufacturing process, guide its course within exact limits, and deliver said log at the finished end in the form of consistently uniform, high quality cellulose fibres.

A year or more before the visible beginnings of the pulp mill the Weyerhaeuser Timber Company had completed and put into operation one of the largest and most modern sawmills in the world. The location of this mill was on a 700-acre site in the new industrial community of Longview. The site had an ample frontage on the Columbia river. Here were spacious deep water docks which could accommodate for loading at one time four large ocean-going vessels.

Of equal importance was the huge fresh water log booming grounds which the river provides at the mill's door. Just above the Weyerhaeuser site the Cowlitz river dumps its mountain water into the broader Columbia. For pulp mill purposes this was a double asset; providing an ample supply of excellent water for the pulp mill and affording a long, deep valley thru which to tap a vast stand of timber.

With Longview chosen as the pulp mill site, the next detail, that of designing the pulp mill, was delegated to O. C. Schoenwerk, an engineer of wide general experience and thoroly acquainted with the peculiarities of pulp manufacturing on the Pacific Coast thru his

There are six digesters of fifteen tons capacity each in the new Weyerhaeuser mill. Overhead chip storage is dispensed with and a continuous conveyor belt is substituted. Chrome nickel steel valves are used extensively to offset corrosion problems. The Chemipulp system is used in cooking and control by instruments has been adopted to minimize variables in the process.

active contact in executive capacity with several of the largest and newest of the pulp and paper mills of the region.

To take charge of its newly created Pulp Division the Weyerhaeuser Timber Company appointed R. B. Wolf as general manager. This selection was guided by Mr. Wolf's more than a quarter of a century of practical experience in the pulp industry, by his wide acquaintance with manufacturing and sales problems, and by his recognized authority in the production of bleached sulphite fibre.

The design of the mill was guided by end qualities desired in the grade of pulp to be produced. In fact, it is entirely appropriate to put that statement much more plainly; the pulp grade desired determined the design of the mill.

The pulp must be clean. Out of this requisite came the development of a water system to provide a minimum of 20,000,000 gallons of filtered and treated water daily; the extensive use of wood pipe and non-corroding metal joints and bends; the use of wood stock chests; the use of special non-corroding steels in blow lines, valves, and pumps; the building of dust-tight buildings; the filtering of air in the machine room.

The pulp must be uniform. Out of this grew the extensive technical control department; the elaborate use of recording and control instruments thruout the mill, many in entirely new applications; the design of large mixing tanks and efficient agitating systems.

The pulp must be high in quality. Out of this grew refinements in the acid plant; in the cooking system; elaboration of the washing and screening systems; low temperature drying.

Guide Posts

Design of the mill proceeded with these fundamentals acting as guide posts. The necessary equipment was estimated to accomplish the purpose desired and then, and only then, buildings were planned to protect the equipment and provide the necessary control of working conditions. The completed mill provides straight line manufacture with the finished product delivered directly to warehouse or dock.

The water system was designed by the California Filter Company in collaboration with Mr. Schoenwerk. An intake approximately one-half mile upstream from the pulp mill had been constructed previously for sawmill and power plant use. This was amplified and a half mile of continuous wood stave pipe was laid inside the river dike to the filter plant, which is located near the head end of the pulp mill. The entire structure, 200 by 350 feet, which includes settling basin and filter beds, is built of reinforced concrete. Thanks to a simple arrangement of automatic controls one operator per shift can look after the filter plant. There are three main mill supply pumps with a combined capacity of 15,000 gallons per minute. All water delivered to the mill is filtered, clear and colorless, treated to eliminate slime forming organisms, and sterilized to be safe for drinking.

The wood room is the only unit of the pulp mill that is detached from the main group of buildings. It is located for convenience adjacent to the main sawmill units, one of which serves as a log break-down. Both large cants and smaller slabs and edgings are accepted by the wood room for cleaning, chipping and screening. Only accepted chips are conveyed over the half-mile long rubber belt conveyor to the pulp mill. The bark and sawdust travel only a short distance to the central steam and power plant.

The pulp mill is supplied with all steam and power requirements from the main boiler house which serves all operations on the Weyerhaeuser property. The power plant is housed in a concrete building 236 feet long and 169 feet wide. The original installation consisted of 8 boilers of 800 h.p., 3 drum, tubular type, operating on 325 pound pressures and 150 degrees of super heat.

With the building of the pulp mill an additional 900 h.p. boiler capable of operating at 350 per cent of rated capacity, was installed. The new boiler is fitted with all the latest appliances, including cinder cones, with the idea of eliminating from the atmosphere the discharge of any foreign matter that might be detrimental to the production of high quality pulp.

Power is generated in two Westinghouse turbines with a combined capacity output of 19,000 k. w. Power is distributed on a 2,300-volt line. The larger motors operate on 2,300 and 550 volts, while 110 volts serves the ordinary demand.

The main group of pulp mill buildings range in a straight line from acid plant to pulp warehouse and include acid plant, digester building, blowpits and stock chests, first screen room, bleach plant, second screen room, stock chests, machine room, and pulp warehouse. The chip storage building is not included in this line. It is a detached building parallel to the main line and approximately adjacent to the digester building. Chris Kuppler's Sons, contractors, constructed all pulp mill buildings.

No excavation was made for the mill buildings. All rest on piling. This characteristic is interesting in that there are no basements in which to house the usual auxiliary equipment and pipe lines. In fact, with respect to pipe lines, these were designed to give greatest hydraulic efficiency and were not made to conform to the contour of the buildings. It is more nearly true to say that the buildings were made to conform to the pipe lines. No pipes are buried in permanent building material. All are readily accessible, being either exposed within or without the building or covered lightly with earth.

Use of Wood

Material for the different buildings was selected on a basis of use requirements, maximum service, and cost. Concrete is used in all buildings supporting heavy equipment loads or where water is used freely. Acid plant, digester building, screen rooms, bleach plant, and machine room are all of reinforced concrete construction, while the wood room, the chip storage bin, all blowpits, stock chests, and mixing tanks, and the warehouse are built of wood. All buildings are furnished in a gleaming white paint. The wood chests, tanks and blowpits are finished in the natural wood color with an oil covering.

A significant feature of the mill is the extensive use of wood. It was in some degree natural that a lumber-producing company should specify lumber for many services in its new construction, but this favoritism was not allowed to outweigh good judgment. The selection of building materials was made solely upon the basis of maximum utility. Chipping plant, chip storage bin, all stock tanks and chests, all pulp stock lines 6-inch or over, the pulp warehouse, are all-wood construction. The sash used in all parts of the mill is wood. Roofs are cedar. The floor of the pulp warehouse, designed to provide a resilient and durable surface for the electric trucks, is 2″x6″ end grain matched hemlock. As a final gesture in wood and practical advertisement of

Wood has been used extensively for mill buildings, horizontal and vertical stock tanks and chests and all stock lines six inches or more in diameter. Selection was guided by utility and non-corrosive qualities. The larger view shows wood tanks and stacks of selected clear lumber. The inset shows detail of continuous wood stave pipe construction and the method of joining to leadized bends and valves.

the complete products of the Weyerhaeuser Timber Company the Pulp Division office has been excellently finished in knotty hemlock panels.

Sulphur and limerock are unloaded at the deep water docks into specially constructed hoppers of ten tons capacity. Pneumatic-tired Willamette-Ersted carriers of extra large size straddle these hoppers and skip off with them to the acid plant. Controlled, precision operation, which is such a predominant characteristic of the entire mill, begins at this point with the provision of special scales for weighing limerock and sulphur as it goes into consumption at the acid plant.

The acid system at the Weyerhaeuser mill is essentially the conventional two-tower Jenssen system used so extensively in the sulphite industry. A significant feature in this installation is an acid filtration system. This consists of four 9′x8′ tanks filled with sand and gravel, arranged for back washing with water. Acid from the settling tanks runs by gravity to the filters, thence to the filtered acid tanks, and is then pumped to the reclaiming and storage tanks.

In addition to the standard acid making equipment, an auxiliary absorbing tower has been provided in which the filtered acid is brought into contact with the cooled sulphur burner gases before they pass into the Jenssen towers. The pressure in this tower can be maintained as desired from atmospheric to 20 pounds above the atmosphere. By this means the quality and strength of the acid can be perfectly controlled quite irrespective of variables normally beyond the control of the operator, such as moisture in the chips, temperature of the water and hardness or softness of the limestone.

The New Steels

The new acid-resisting steels have supplanted the well known bronze to a great extent where corrosive sulphite liquors are handled. The Doran Company, of Seattle, which supplied acid plant valves and digester blow valves, equipped all of the former with KA₂ steel stems, seats and discs. The Electric Steel Foundry Company cast three acid pumps and three pit pumps entirely of Krupp Nirosta steel, known as KA₂MO. This is the first Pacific Coast mill to have all-steel pumps. The choice was made because the steel, tho more expensive, offered a much longer life than acid-resisting bronze. A total of 75 chrome nickel steel valves, fabricated by Wm. A. Hardy & Sons Company, have been installed. Altho an experimental valve here and there in a mill is not new, the Weyerhaeuser mill is the first to specify a complete steel valve installation.

The digester building conforms to a recent practice in that the usual chip storage bin above tht digesters is omitted. The digesters are filled by means of a continuous Pioneer Rubber belt which carries a large, uniform volume of chips as needed from the nearby ground-level storage bin. The chips are weighed on a Merrick Weightometer as they enter the digester building just above the digester operating floor and discharged to the desired digester by means of an automatic adjustable trip. Continuous samples are taken to determine moisture content of the chips.

In installing six digesters of fifteen tons capacity each the designers have reversed the trend of recent years which has run to ever larger cooking vessels. Reasons supporting the selection of the smaller units include a greater insurance of uniformity thruout the cook, elimination of peak steam loads and consequent improvement in boiler house efficiency, smaller but more frequent acid charges, thus eliminating undesirable extreme peaks in the acid system. The digesters were fabricated and erected by the Willamette Iron and Steel Works of Portland and lined by the Stebbins Engineering & Manufacturing Company.

With the ideal of pulp uniformity constantly in mind the digester room was designed to take full advantage of the latest developments in sulphite cooking. With control instruments installed on intake steam and gas relief lines and recording instruments checking up all phases of performance during the cook the operators have been provided with information which makes possible a degree of cooking control never before obtained.

The cooking process has the benefit of the equalizing advantages provided by the Chemipulp System. The Weyerhaeuser installation is the second on the Pacific Coast. An interesting feature of the installation here is the special concrete housing for the two Chemipulp vessels, providing complete protection from weather.

Means have been provided for maintaining the recovered acid uniformly at any desired temperature.

Digester blow valves by Doran are bronze, but the pipes to blowpits are the new type non-corroding steel. This is in keeping with general practice in the design of the mill, where the new steels have been used to eliminate the severe corrosion of sulphite acids and to prevent contamination of the pulp by iron compounds. Even the bolts used in the vomit stack bracing are of non-corroding steel.

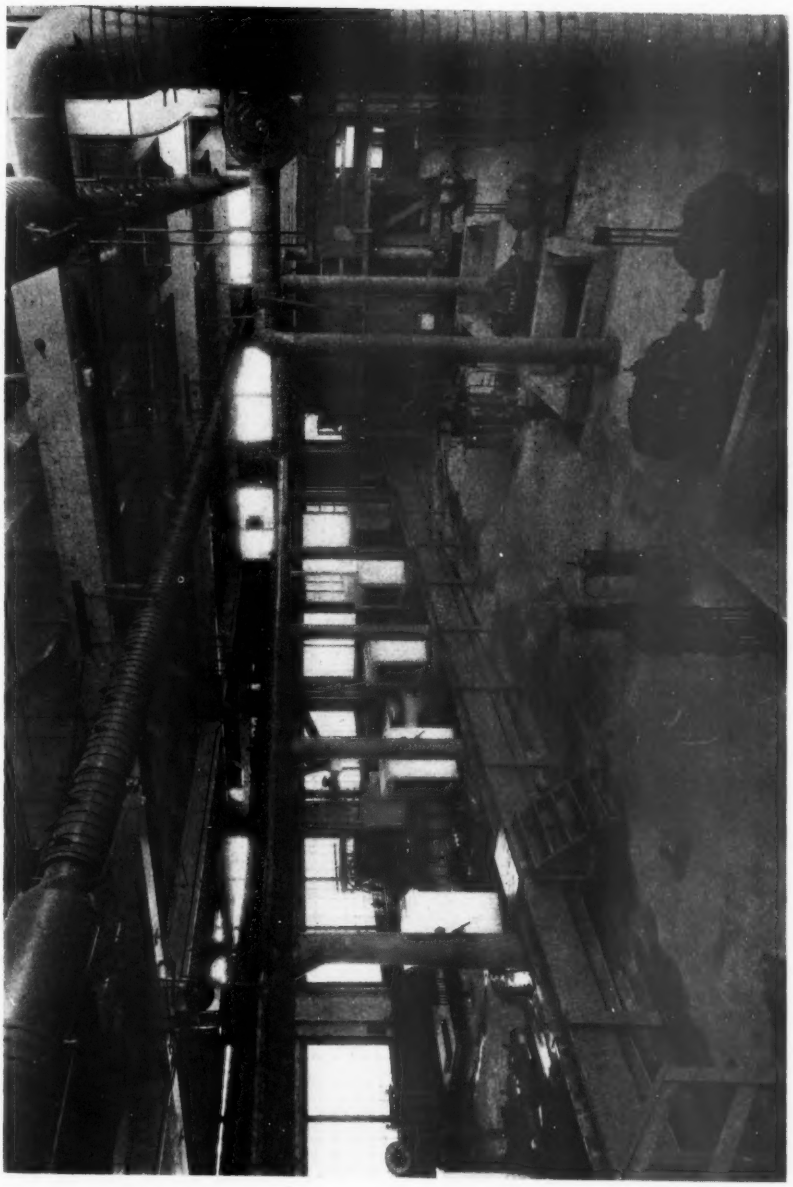
For each of the six digesters there is an individual wood stave blowpit and stack. The blowpits are equipped with Allegheny perforated stainless steel bottom drainer plates. Design is such as to provide a maximum draining and washing area. An enclosed superstructure over the blowpits, linked with the digester building, provides protection for the operator and equipment. Each blowpit has four showers in addition to showers in the stacks.

Consistency Control

Stock is washed from the blowpits by means of high pressure Monitor nozzles mounted on vertical arms above openings in the top of each blowpit. These nozzles, which operate on an 80-lb. pressure, have a flexible operating range that permits thoro washing out. Addition of water thru the washout nozzles provides a preliminary washing for the raw stock before it passes over the first Oliver washer. This unit, as are other Olivers in the plant, is exceptionally large in size to provide ample washing capacity.

It is the belief of the designers that pulp uniformity depends on knowing how much stock and how much water is being carried thru the process at every point of the flow. This fundamental accounts for the practice of metering water where it is introduced and of regulating the consistency of the stock at several points in the mill. First regulation of consistency occurs on the discharge side of the Oliver brown stock washer. Here a new Western type consistency regulator keeps check on the stock which drops into the 50-ton, 20-foot diameter, 120-foot long blending tank constructed of six-inch, selected clear Douglas Fir wood staves. Circulation of the stock and thoro blending is effected by a new type agitating system.

From the brown stock chest the pulp is passed thru four revolving coarse screens which throw out the undigested knots. Diluted further, with metered water, the stock flows over the first rifflers which have 8,000 feet of area. Construction has been simplified by making the riffler bottoms integral with the floor. Stock then goes to twelve rows of Smith & Valley flat screens,



The bleaching process is given every benefit of automatic control. There are four first phase cells, seven second phase cells and three third phase. First and third phases operate at low density and the second at high density. Definite quantities of fibre are delivered in batch lots at each stage and introduction of bleaching agents is carefully computed. Design of the department aims at lower man-per-ton ratio.

all of which are operated on the principle of full flow. All stock goes over the first seven rows. Overflow is returned to the next three rows, and the resultant overflow is again sent over the final two rows.

The tailings are worked up into laps periodically on a Valley Iron Works jordan. Thruout the flow over coarse screens, rifflers, and flat screens the added water is metered and recorded. In fact, control of mill water in the stock is continued right down to the wire which forms the pulp sheet ahead of the drying machine. It is a cardinal principle in the design of the mill to be able to measure the consistency of the stock at any point.

Accepted stock from the first screens is thickened to a predetermined and controlled consistency on two Valley Iron Works deckers, and then pumped into a wood stave unbleached stock storage chest, 32 feet by 32 feet in size. White water from the deckers is pumped back by a Bingham 3,000 g.p.m. pump for dilution of the stock going to the second and third series of flat screens. White water above the metered demands of these screens is used in the coarse screens, or knotters, and any surplus above this requirement is bled to the sewer, thus insuring freshness in the water lines.

Three Phase Bleaching

The bleaching department of the new Weyerhaeuser mill embodies all of the latest, modern developments in the production of the highest grade of bleached chemical pulp, yet there is no element in the design or equipment of this plant that has not been thoroly tested by experience. The process used in the bleach plant is what is known as the three phase system of the Pulp Bleaching Corporation.

After riffling and screening the unbleached pulp is deckered to a consistency of a little more than 3½ per cent. It then passes thru a consistency regulator which controls the consistence within very close limits at 3½ per cent and is then dropped to one of four tile lined chlorinating tanks. These tanks have a capacity of six tons of air dry fibre each at 3½ per cent consistence. They are designed for high rate of agitation since rapid agitation is very essential to efficient chlorination.

The total 6,000 cubic foot content of one of these tanks is normally turned over in slightly less than one minute with the expenditure of less than 25 h.p. Under these conditions chlorine may be added rapidly and absorbed very effectively. As soon as the chlorinator is full of stock of a known bleachability the proper amount of liquid chlorine is weighed off into a Toledo weighing unit from which it passes, under its own pressure, into an evaporator and from the evaporator directly into the chlorinator.

When all of the chlorine has been added for a particular batch, it is allowed to exhaust and the contents of the chlorinator neutralized with alkali which serves not only to neutralize the hydrochloric acid formed in the chlorination, but also to render soluble certain chlorination products which are not soluble in the acid condition.

The contents of the chlorinator are then pumped over an Oliver washer where the bulk of the chlorination products are removed. From the first washer the partially washed pulp goes to a pair of high density Oliver thickeners where further washing is accomplished and the pulp ultimately thickened to the density required for the second phase bleaching.

As the pulp is discharged from the Oliver thickeners a measured amount of hot water is added to bring the temperature to the proper point for bleaching in the second phase. The pulp and water feed are so regulated that the consistence entering the second phase bleacher is approximately 18 per cent and the temperature 70 to 75 degrees F.

The equipment for the second phase of the bleaching operation consists of 7 six-ton type V. W. bleachers fed by a belt conveyor from the Oliver thickeners. As soon as one of these V. W. bleachers is filled with pulp, at the proper temperature and consistence, the required amount of bleach liquor, as determined by a bleachability test, is added and the content of the bleacher is circulated until the bleaching action is complete.

The bleached pulp is then discharged, together with a measured amount of water from a measuring tank, into a tile lined dump chest from which it is pumped over an Oliver washer. The discharge from the Oliver washer passes thru a consistency control unit which delivers it at 3½ per cent to the third phase bleacher, of which there are three of the same construction as the first phase chlorinator.

Altho pulp at this point is fully bleached, in the third phase bleachers it receives a treatment with a very small amount of hypochlorous acid, the object of which is to neutralize any basic residues which may be held by the fibre and slightly improve the brightness of the color. This third phase treatment also renders the pulp much more permanent in color with very little tendency for the finished dried pulp to go back in color upon storage.

Chlorine Weighing

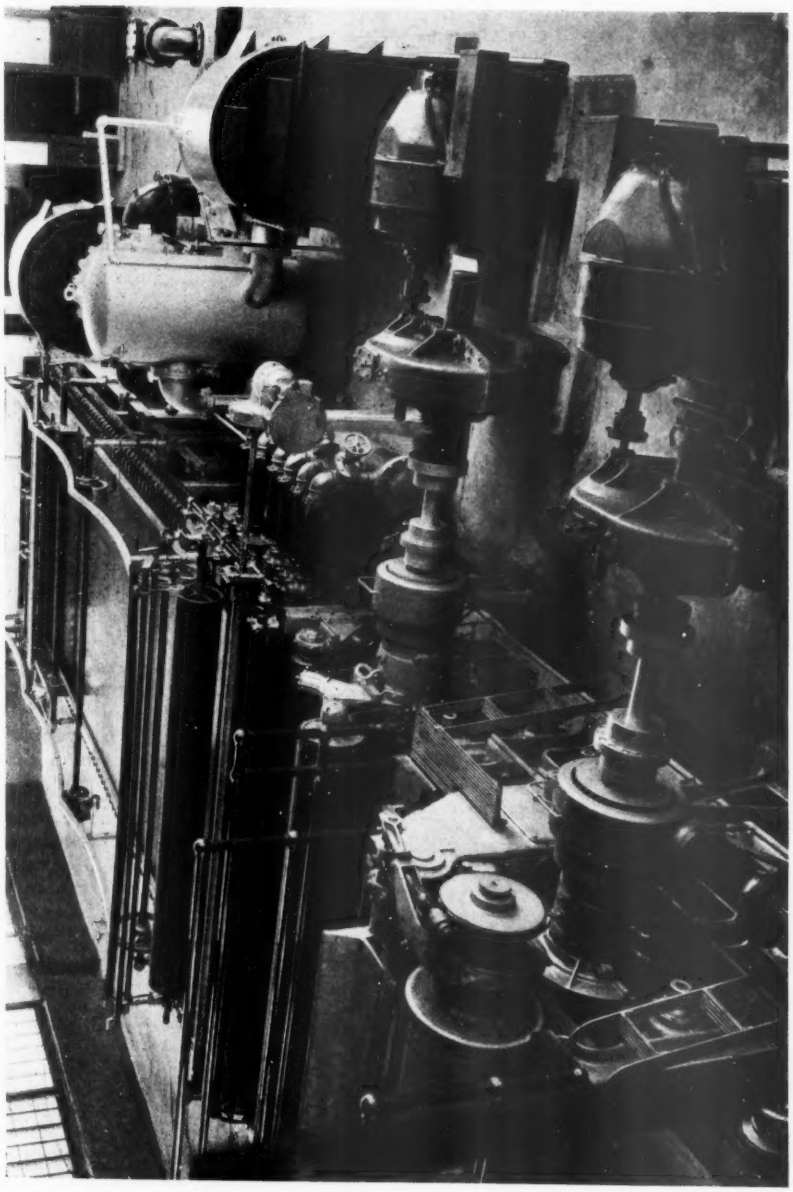
Power for circulation in all bleaching cells is provided by Westinghouse motors operating thru Falk reducing gears. Atmosphere in the bleach plant is conditioned by a J. O. Ross Engineering Corp. System.

The bleach plant of the Weyerhaeuser mill, like all other departments, has been arranged for careful and accurate control thruout the entire process. The unbleached pulp will be delivered to the first phase chlorinators in definite batches under careful consistency control. The bleachability of each batch will be determined and the necessary amount of chlorine will be accurately weighed out and recorded. The alkali for neutralization after chlorination will also be weighed and recorded.

The washed chlorinated pulp will be delivered in definite quantities to the second phase bleachers and the bleachability accurately determined. The bleach liquor for the second phase bleaching will be handled thru an indicating and recording meter so that the total amount of bleach liquor for each batch will be known as well as the total consumption of bleach liquor per day for the entire tonnage.

After the second phase bleaching, as mentioned above, the pulp will, while emptying, be diluted with a definite volume of water from a measuring tank so that the consistence of the diluted pulp will always be the same. The discharge from the Oliver washer after the second phase bleaching will then be diluted with water and passed thru a regulator which will control the consistence within narrow limits for the third phase bleaching.

After the third phase bleaching the pulp passes over a final Oliver washer from which it is discharged and mixed with a large volume of fresh water for final riffling and screening. The fresh water for the entire



Consistency of the pulp flowing to the wire is carefully controlled to form a sheet of even caliper on the Fourdrinier. Water is extracted thru suction flat boxes, couch and two press rolls. As there is no basement suction connections are on the back side and piping is simplified. Sectional electric drives are employed. Anti-friction bearings are used extensively.

bleach plant enters at this point. The water for dilution and washing after the first and second phases consists of white water from the final phase of washing and bleached screening as well as from the drying machine, all of which very pure white water is collected in suitable white water tanks and delivered to the bleach plant for washing purposes.

Thru the use of this bleaching process the maximum quality factors present in the unbleached pulp will be maintained, since the process is designed to remove the maximum amount of lignin residues from the unbleached pulp by means of a minimum amount of oxidation. In this way the chemical and strength factors of the unbleached pulp are maintained in the highest degree and all of the quality put into the pulp by extreme care in previous steps of the operation is conserved as far as possible.

The emphasis on uniformity and cleanliness is by no means ended upon discharge of pulp from the bleach plant. All bleached stock is run over a second set of rifflers, 6,500 square feet in area, and then over 16 fourteen-plate Smith & Valley flat screens set up in four rows of four each. Constant predetermined consistency is maintained by volumetric control of water added. Following the final screening the pulp is pumped into a second horizontal blending tank of the same size and type as used for brown stock.

Vacuum Dryer

With all the precautions taken to secure the desired high quality pulp characteristics up to this point in the production line, a final safeguard is provided in an accurately regulated flow of stock to the fourdinier wire and the drying of a uniform sheet at low temperature in the Minton vacuum dryer. This is the second Minton vacuum dryer to be installed on the Pacific Coast for pulp drying, and one of the few installed for this type of service in the industry. It was fabricated in the shops of Rice, Barton & Fales, Inc.

The fourdrinier wire is 156 inches wide and 80 feet long. Excess water is taken from the sheet by six oscillating suction flat boxes, a 30-inch suction couch roll, and two 28-inch suction press rolls. All rolls were supplied by Downingtown Manufacturing Company. They are all fitted with rear suction and direct drive. This permits the piping to be run horizontally and directly from the roll below to the Nash vacuum pump installed at the rear of the machine. Absence of a basement in the machine room makes necessary the direct piping on the rear side and affords a substantial advantage in the necessity. The couch and suction rolls, which were specially designed for this machine, are fitted with Downingtown trouble-proof, self-aligning, ring-oiling, water cooled bearings.

All rolls on the fourdrinier part are carried on antifriction bearings. Modern deckle equipment with slices and monel metal saveall trays under the wire take care of the white water. The press frames and press housings are built very heavy to withstand the pressure necessary on the sheet of pulp. All of the operating mechanism lifting the top press roll and for applying pressure to the top press roll is encased in the housing, making the housing free and accessible for passing the pulp. All of the felt rolls are carried in Timken antifriction bearings, as are practically all bearings on the vacuum section. The doctors for the upper roll are made of special construction with flexible blades.

An automatic weight and caliper control mechanism assures the passing of a sheet of constant caliper, basis weight and moisture content into the dryer section. The vacuum dryer section has 36 60-inch rolls equipped with upper and lower felts. It operates under 28 inches of vacuum. The seal rolls at both ends are carried in S. K. F. anti-friction bearings.

The pulp drying machine is driven by General Electric sectionalized drives with speed reduced in each to proper ratio by means of Falk reducing gears. There are two drive units on the vacuum dryer section, individual units on each of the ingoing and outgoing seal rolls, on the couch and suction press rolls and on the cutter end.

Fast's Flexible Couplings are used between the driving and driven parts of the machine—and also in many other parts of the mill. Their purpose is to prevent transmission of vibration to the machine, thus making for smoother production, longer life of parts, decreased maintenance, and elimination of coupling breakdowns.

Dryer cylinders are serviced by a Fulton dryer drainage system.

Filtered Air

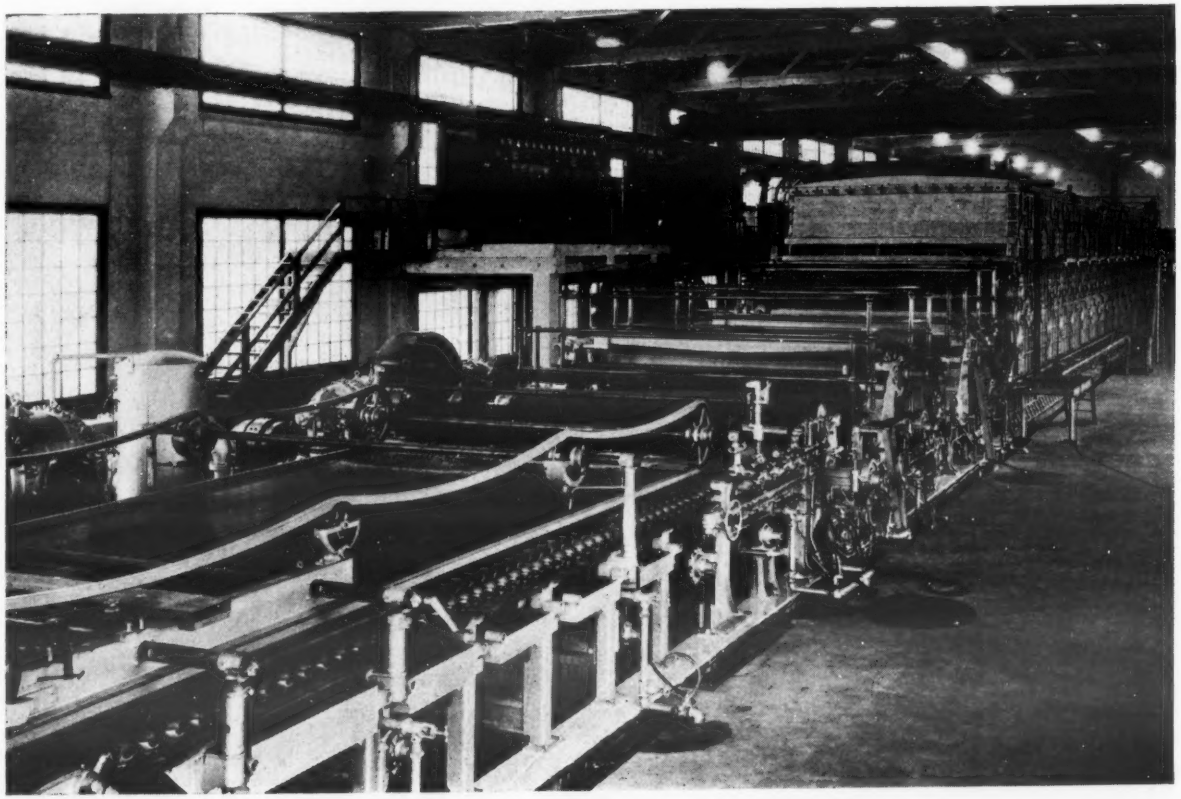
The machine room is situated at right angles to the other buildings preceding it in the mill process. The walls and floor are of reinforced concrete, but the roof is Douglas Fir timber truss construction planked with cedar. The room is well lighted naturally with wood frame sash. All windows are permanently sealed with dust-tight felt strips and, as the ultimate precaution in providing dust-free and properly conditioned air in this department, all air entering the machine room is first passed thru a J. O. Ross Engineering Corporation system and distributed strategically in the room thru a duct system.

The net result of all the features that have been incorporated in the design of the machine room is, after painstaking care has been taken to produce high quality, uniform fibres up to this point in the process, to turn out, ready for shipment, a pulp sheet of uniform formation, caliper, and moisture content, with the inherent qualities of the fibre preserved against the slightest impairment. Exact control of all factors, not excepting air and water, makes this possible.

Novel Warehouse

The pulp sheet is cut into 30-inch squares on a Downingtown extra heavy cutter and duplex slitter. Baling is carried out on two identical lines. The pulp squares are stacked by hand on a dial scale into bales of exactly 400 pounds each, compressed under hydraulic presses to a given cubical content, and then securely tied in a sulphite wrapper with automatic wire-tying machines, the first of their kind to be employed in this class of work. The method provides neat, uniform weight, uniform size bales. Piled 16 bales to a skid, the pulp is finally check weighed on a large platform scale before moving to warehouse, car or ship.

Transportation from machine to warehouse is taken care of by electric industrial trucks equipped with tiering apparatus. The warehouse itself is unique. Its construction is all wood, dust tight, and windowless. The dimensions are 165 feet by 280 feet, providing ample storage space for 6,000 tons of pulp, thus assuring a flexibility in shipping that will work in nicely with intercoastal water shipments. As a final precaution in delivering clean pulp to the customer in rail shipments the company lines the cars with a paper "tent" before loading and finally seals the doors with paper.



Pulp is dried at low temperatures under vacuum with moisture content of the finished sheet controlled within close limits automatically. The machine room is dust-tight construction and all air entering the building is filtered and conditioned before distribution. Careful tests of finished product, accurate weighing, and automatic bale tying characterize operations at the dry end.

NEW IDEAS IN WOOD ROOM PRACTICE

THE cardinal function of the wood room serving a high grade pulp mill is to deliver clean, well cut, evenly sized chips to the digester bins in suitable volume at low cost. How this department has been designed to accomplish its object at the new sulphite mill of the Weyerhaeuser Timber Company is of particular interest because of the precautions taken to exclude dirt at the source and the novel methods introduced in wood room practice.

In the first place, the company, as an extensive owner of timber and large scale operator of logging camps, railroads and sawmills is in a position to begin the selection of its wood in the forest with segregation of logs most suitable for pulping. Arrived at Longview, the logs are broken down in a regular sawmill, but beyond that point pulp wood preparation is entirely a distinct function.

The wood room is a separate building of heavy timber mill type construction, specifically designed for the purpose, conveniently located with respect to the log pond and main group of sawmill buildings. As wood rooms go this one is unique in that the wood sash windows are permanently sealed with felt strips and all air is admitted to the building only through a filter system, this precaution being taken to exclude dirt and cinders so frequently prevalent in the atmosphere in the vicinity of sawmills. A further advantage in locating the wood room approximately one half mile from the pulp mill proper is that the bark, sawdust, and other refuse resulting from the chipping preparations can be conveyed easily to the company's nearby central steam and power plant.

In operation one sawmill is used one shift per day to break down logs into large sized cants of convenient diameter dimensions approximately 8″ x 8″ x 8′, altho larger pieces can be handled. The larger cants are conveyed to the wood room on an endless Pioneer Rubber belt conveyor, while the smaller slabs, reduced to 4 foot lengths, are transported to the wood room on chain conveyors.

The smaller material is handled according to a somewhat conventional Pacific Coast practice, the individual pieces being cleaned on a battery of hand operated concave head barkers and dropped to an 84-inch Sumner disc chipper.

It is that part of the wood room which is designed to handle the large cants which represents a new departure in wood room practice. The cants arrive in the wood room on the upper floor and are diverted to one of the four lines. These lines extend two down each side of the building to the far end and then double back thru the center of the building on the next lower level. A view of the main operations in the wood room presents a picture somewhat as follows: a four-way distribution platform at the end of the belt conveyor, a balcony extending down each side of the building with two automatic barkers installed on each balcony, and a central finishing floor one level below the balcony on which are installed cut off saws, knotters and washers.

On any one of the four lines the cants make the following journey: they first go thru a new type Stetson-Ross automatic barker euipped with a concave, overhead cutter mounted on a tilting arm designed for easy and semi-automatic regulation of depth of cut.

The tilting head on the Stetson-Ross automatic barker is carried on vertical slides. It is tilted by means of an electric motor and the complete assembly is lifted by means of a steam cylinder, both completely within the control of the operator whose position is alongside the machine and slightly above the line of operation, thus permitting an unobstructed visibility of the complete curvature of the wood.

One operator is required for each barker and, by means of control levers he is able quickly to adjust the cutter head to each individual piece. The cants are fed thru the barker under positive power. The feed is driven by a variable speed reversing slip-ring motor completely within the control of the operator. This permits return of the cant for additional barker cuts if necessary. Many of the cants are nearly clear pieces of wood with bark only on one side.

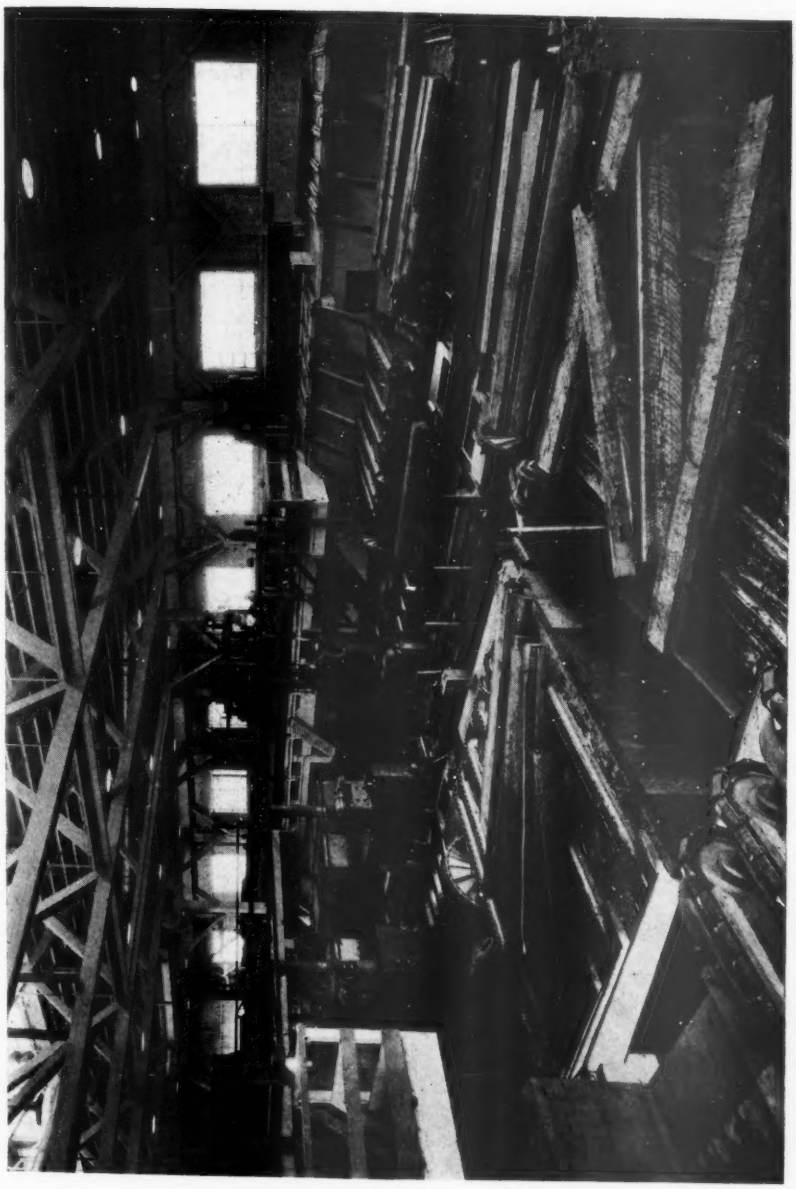
There is, of course, a fundamental advantage in preserving the original log in large sizes until it reaches the chipper. This practice eliminates much unnecessary sawdust, slivers, and labor. Barked cants discharged from the automatic barkers are carried on live rolls to the end of the building and then dumped at right angles down an incline, there to reverse the original direction of their travel. They first pass a circular cut off saw which permits the easy cutting out of large knots or major areas of undesirable wood.

Next in each line is a Stetson-Ross knot boring machine. The design incorporates a radial arm with motor-driven vertical augur or bit 2″ to 4″ in diameter which is quickly raised or lowered by a steam cylinder. In order that the knot may be followed toward the heart of the wood the stock is tilted to the desired angle and clamped while being bored. Operators at cut off saws and knot borers act as inspectors and are equipped with hand axes to touch up spots where necessary.

Up to this point in the wood room the wood cleaning equipment is Stetson-Ross, including the smaller hand barkers and the barker knife grinders. The Link-Belt company designed and supplied much of the conveying equipment.

The final step before chipping is to pass the large cants thru an enclosed shower which serves to scour the wood free from sawdust and surface dirt.

Following this thoro washing the cants are dropped to a lower level of the building and fed thru two 110-inch Sumner disc chippers. These two large size



The object in the wood preparation plant is to preserve the log in cants of large size and minimize wastage. There are four automatic barkers, two of which are just visible in the center of the opposite balcony. The wood follows one of four lines, two on each side of the building, doubles back thru the center, going to cut off saws, knot borers, and washers, to chippers on the lower level.

chippers, as well as the smaller one previously mentioned, are each mounted on individual concrete footings. This eliminates transmission of vibration to the main building structure. Each chipper is fitted with S. K. F. bearings and is belt driven by an individual Westinghouse motor. Each chipper has a special spout which prevents tumbling and thus permits chip cutting right down to the very end of each piece, a feature which eliminates the end wastage commonly experienced.

The chips are carried to a gallery and fed in regulated quantities to four Sumner shaker screens. Accepted chips go directly to the main conveyor and over sized are passed thru a Sumner chip crusher and returned to the screen. The screens and crushers are all equipped with S. K. F. bearings.

The 30-inch Pioneer Rubber belt conveyor which leads from the wood room to the chip storage bin adjacent to the pulp mill is believed to be the longest of its kind in the world. Its length exceeds one-half mile. The belt is entirely enclosed in a long shed and, in keeping with the watchfulness displayed in the rest of the mill to exclude dirt, this conveyor shed has been constructed of two thicknesses of matched lumber with paper lining in between. Not satisfied with this assurance of a dust tight structure, the enire length of the conveyor shed has been painstakingly sealed from within also. There is not a window in the entire length of the conveyor shed, and only a few doors, the latter occurring at the ends of belt sections.

The conveyor leads to a novel and practical chip storage bin located at ground level adjacent to the digester building. Here the chips are carried to the upper limits of the bin and discharged at any desired point therein by means of an automatic Link-Belt tripper. The bin's Lamella type roof has an external appearance not unlike a large barn. The significant feature about this type of construction is that chips will find their natural angle of repose, thus providing maximum storage in the cubic area of the building.

Another interesting feature of the chip storage is its division into 12 compartments, each fitted with a hopper bottom, permitting a segregation of chips if that is desired. The hopper bottom of each compartment is equipped across its entire width with specially designed power driven discharge drums. These permit withdrawal of chips from the entire width of the bin, or from any section of it, in regulated amounts. Running the width of each compartment is a rubber belt conveyor which discharges into the main rubber belt conveyor leading to the digester loading chutes. The compartment arrangement of discharge drums and belts enables the operators to provide an evenly regulated flow of chips to the digester from any point of the bin.

The chip storage bin of course embodies dust proof construction to carry thru the idea of chip cleanliness.

AN INTERESTING STUDY IN MILL HYDRAULICS

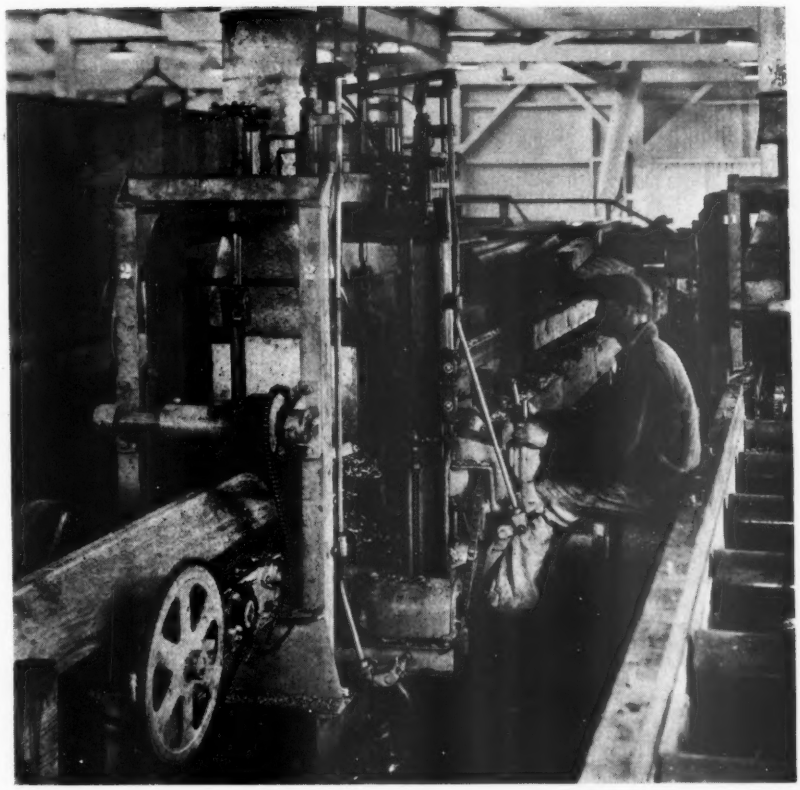
A MODERN high grade pulp mill requires about a barrel of water for every pound of air dried fibre it produces. By increasing the stature of that single pound of pulp fibre to 175 daily tons, and visualizing the 20 millions of gallons of water necessary to the total production, it is readily realized that mill hydraulics represent an extremely important factor in mill design.

As for mill hydraulics at the new sulphite plant of the Weyerhaeuser Timber Company there are so many points of interest that the subject is worthy of special treatment. Several fundamental principles were set out as corner posts in designing the Weyerhaeuser plant. Among these were: that pumps and pipe lines are essential tools in a pulp mill and therefore their design must be with an eye toward the greatest efficiency with the protective building structures to conform to them rather than vice versa; that pumps and piping in all parts of the mill must everywhere be accessible and never buried in permanent building material; that all pumps and pipes must be over capacity for designed loads to provide smooth flow and good control; that pipe lines must minimize friction and eliminate possible contamination of the pulp by corrosion; and that stock consistency must be known exactly at any point in the mill process and be subject to close control. With these fundamentals in mind the mill hydraulics were worked out as a distinct problem by the designing engineer, O. C. Schoenwerk, with the appreciable assistance of R. V. Bingham, Portland pump manufacturer, who supplied all pumping units, agitating systems, and water metering devices in the mill.

Because it is non-corroding and for other preferred reasons wood pipe was specified for all stock lines down to six inches in diameter. Use of continuous stave pipe bound with individual hoops eliminated the objection to wire bound wood pipe, which has been known to "explode" when the wrapping wire corroded thru. National Tank & Pipe Co. of Portland fabricated all wood pipe and chests.

All pipe sections are joined without flanges. Connecting fittings are made of special steel treated with a leadizing process which serves both to minimize friction at the pipe bends and to remove the danger of corrosion as lead is immune to sulphite pulp chemicals. All metal sections are welded.

As there is no basement in any department of the mill some deviations from the usual mill hydraulics were necessary. This in part accounts for much of the pipe being run outside of the buildings in plain view, an advantage here being that the runs may be made straighter for greater distances than where it is necessary to conform to the contour of buildings. Many elbows and bends are thus eliminated. Such practice has made it necessary however to redesign some pump features and revise practice on inlets and outlets. For



The new type automatic barkers employed in the wood room are operated by one man on each and are designed to feed cants of large diameter thru under positive power. By means of a tilting arm carrying a concave-head cutter and a set of controls the operator can regulate the cut to the required depth. In the lower view the Lamella type ground level chip storage bin is shown. It is a dust-tight structure.

example, there are no check valves in the mill. These are avoided largely by top intakes in the tanks and chests and by providing same with overflows and drains. Sewer lines, which must be sufficiently below the active departments of the mill to permit a free gravity runoff, are all laid outside of the buildings in shallow excavations and carried to a sump which is constantly emptied into the river by pumps.

Another essential point insisted upon in the design was that in operation it is necessary to know and to be able to measure stock consistency at any point in the mill. Fulfillment of this specification meant the installation of many metering and control devices on water and stock lines. This is believed to be a unique departure in pulp mill practice and entirely in keeping with modern ideas of production under absolute control. Further emphasis to this phase will be given in succeeding paragraphs.

The following description proceeds in mill flow order to assist the reader in visualizing the design.

Blending and Mixing

White water is first admitted in the flow thru a special fitting on the digester blow line which permits injection under pressure in the direction of the blow. The blowpits are washed out with adjustable Monitor nozzles into a catch basin, from which point the raw stock is lifted by a 2,300 g.p.m. pump—with a second unit provided as a spare—to the Oliver brown stock washer. A regulator installed at this point controls the cold dilution water added in the form of showers and thus assures delivery of stock at a uniform consistency to the brown stock storage chest.

This chest, of wood stave construction, resembles an immense barrel placed horizontally, 120 feet long by 20 feet in diameter. Agitation and blending is maintained by a system of new and special design, comprised of five vertical pump units which set up definitely overlapping zones of agitation and thus effect a complete and constant blending of stock.

The stock is next pumped to a mixing box ahead of the four coarse screens or knotters and regulated at this point to a 0.75 per cent consistency. White water is metered into the mixing box and the stock entering the knotter is sprinkled with a regulated constant head spray inside of the knotter with an eight pound pressure nozzle. It is further diluted before going to the rifflers.

Interzone Agitation

In the first screen room absence of a basement was again responsible for bringing about a changed pump design. As it was essential that an even flow of pulp to the screens be maintained at all times the designer specified a vertical pump capable of delivering a steady flow of 50 gallons per minute or 5,000 gallons per minute, depending upon the rate of flow to the suction of the pump.

Following the first screen the pulp is thickened over deckers and then diluted to a predetermined consistency with a consistency regulator, discharging then to a wooden storage chest 32 feet in diameter by 32 feet deep. Positive inter-zone agitation is maintained in this chest with three units.

White water from the deckers is pumped back to the second and third sections of screens, the surplus going first to the coarse screens or knotters, and/or white water tanks, surplus to sewer.

In the bleach plant the first stage cells are filled in 20 minutes by means of a new type pump. A new feature in this department is that all filling, dumping and overflow valves are hydraulically operated from the bleach room operating floor. A dominating motive in the design of this department was to reduce the man-per-ton ratio and to minimize variables by substituting exact automatic control for the human factor in so far as possible. The penchant for exact knowledge of operating conditions, so evident in all departments of the mill, is again displayed here in the close regulation of consistency of stock going to bleaching cells in each of the three phases. Hot water introduced at the two Oliver thickeners following first stage bleaching and washing is metered, and water for the second stage bleaching is also measured.

After final washing over the Oliver following third stage bleaching all fresh water added is supplied under a constant head and controlled by means of a butterfly valve.

The pulp now is passed thru a second stage of rifflers and screens, the mill hydraulics in this department being essentially the same as in the first screen room. Excess white water from the screen room may be returned to any one or all of the Olivers in the bleach plant, to the blowpit for washing, or to sewer if there is a surplus.

After deckering following the second screening the stock is again brought to a predetermined consistency by regulators before being dumped into a second 20-foot by 120-foot wood stave machine chest.

Final regulation of stock consistency takes place in the machine head box. Here it was desired that a regulator maintain a uniform density of stock flowing to the fourdrinier wire.

Interesting Sewer Problem

A very interesting pump is that installed in the machine room to serve a three-fold purpose: first, to handle excess water from the machine wire; second, to handle the couch broke; and third, to pump all of the beater broke back to the screen room. This is a vertical pump installed in a small sump in which it is said to function with greater efficiency than the usual horizontal fan pump that is generally installed in the basement under the machine room floor.

Disposal of sewer water at the Weyerhaeuser mill presents a doubly interesting problem in that absence of a basement excludes the possibility of any appreciable head in the sewer line and, second, that the sewage must be constantly pumped over a river dike to a stream that carries a varying volume of water at different seasons of the year. To solve this problem 42″ continuous wood stave pipe main sewer lines were installed with a slight excavation outside the mill buildings. These lead to a sump which receives all of the sewage water from the mill. The cubical content of the sump is equivalent to approximately 75,000 gallons, but when under peak operating conditions as much as 20,000,000 gallons enter this sump and are pumped over the dike in a 24-hour period.

The necessity of maintaining a low liquid level in the sump at all times in order that the sewer line from the mill may have its maximum fall is clearly evident. This demands a pump design which postively eliminates danger of air binding and stoppage for any reason.

With this general picture of hydraulics involved in the mill flow it is appropriate to discuss in slightly more detail some interesting and novel component parts of the system.

Fundamental specifications in pump design called for the elimination of all superfluous controls, minimum maintenance costs, simplified operation, positive func-

Ample washing and screening capacity are provided to insure pulp cleanliness in the Weyerhaeuser mill. Stock is riffled and screened before and after bleaching. All water used is treated and filtered. Pipe lines and pumps are all over-capacity for their intended purpose and installation has been carefully designed with respect to function and load. Added water is metered and consistency is closely checked.

tioning, and ample capacity. Since regulation must be simple, and the high quality product made exact control necessary, automatic control was therefore specified. The necessary performance of each pump was computed in advance with consideration given to all such factors as volume, density of liquid handled, head, variable load and pipe friction in terms of skin surface and contour. With these fundamental pump specifications developed under the direction of the designing engineer, the pump manufacturer was charged with the responsibility of working out the details.

As a result of the many unusual requirements a number of new and interesting designs were developed. For example, the absence of basements in the mill complicated the white water problem. Pumps in the service could not depend for operation on a positive suction head. This problem brought about the design of a new type vertical double suction pit pump equipped with a special compound impellor which allows the white water to enter both the top and bottom sides of the volute casing. All the vertical white water pumps are installed in comparatively small concrete sumps with bottoms three feet below the level of the floors. Altho the cubical content of each sump is equivalent to only a few hundred gallons, nevertheless under peak operations each sump receives approximately 12,000 gallons per minute. This huge liquid load **must** be moved. The pump must never become air bound. The special impellor in the new pump permits the water to be drawn down well below the horizontal control line of the pump volute case. Under this condition only the lower half of the pump will function, an unusual operating characteristic which permits practically all the water to be taken out of the sump without the pump becoming air bound.

Machine Chest Regulation

Three types of recording consistency regulators are used in the mill. The first is adapted for chest regulation; the second for pipe line regulation; and the third for machine head box regulation. These regulators permit any predetermined consistency to be maintained automatically thru control of dilution water volume.

The regulator operates by means of a feeler which revolves in a sampling chamber, thru which samples of pulp are continually being pumped. The feeler is sensitive and responds to any increase or decrease in the density of the stock. This sensitiveness is reflected electrically by the power required to operate its driving motor and activates an electrically operated water valve governing the flow of dilution water. Operation of the regulator is at all times recorded on a 24-hour density control chart which subsequently becomes available for the mill's technical control department.

The regulating method used on the machine chest is similar in principle to that used in the other parts of the mill with the exception that instead of a motor driven feeler to detect the change in density of the stock the regulator employs a series of photo electric cells which are extremely sensitive to the slightest change of density. This is believed to be an entirely new departure in pulp mill practice. Control on all types of regulators in the mill, it is claimed, can keep the stock density within one-tenth of one per cent.

As an important contributing factor to consistently uniform pulp quality the designing engineers are sold on the idea of maintaining a thoro agitation of the pulp in tanks and chests thruout the manufacturing process. Since temporary stock storage was to be effected in two types of chests—horizontal type, 120′ length by 20′ diameter; and the vertical 32′ diameter by 32′ depth—two types of agitating-blending systems were necessary. Both were designed on the principle of maintaining a constant inter-zone pump agitation which would not permit the development of dead pockets, which frequently accompany the mechanical, or paddle type, agitation.

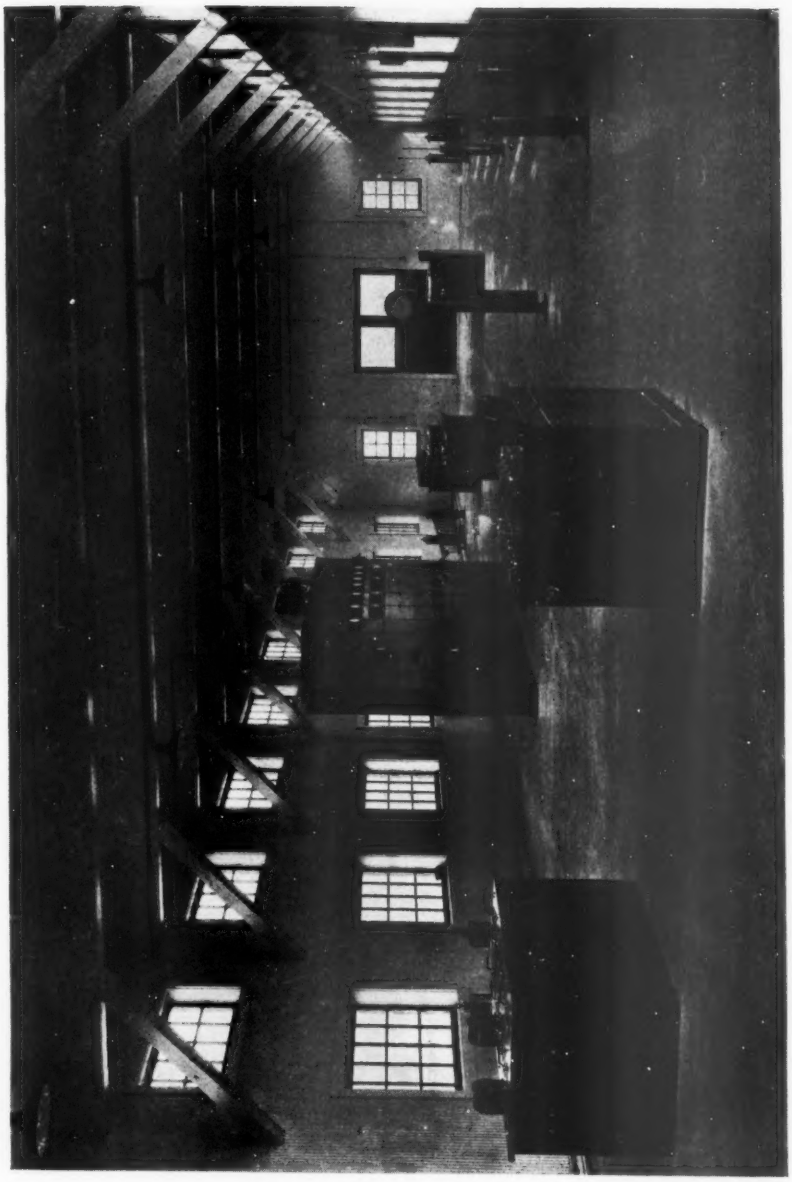
On the horizontal storage chests agitation is accomplished by means of five vertical pumping units installed with equal intervening spaces along the top of the tank. Each unit consists of a motor and special pump which functions thru a vertical pipe extending to near the bottom of the tank and fitted with a Y transfer pipe at the top. The principle of operation is that the pumps deliver pulp from the bottom of the storage chests to the top and discharge into zones supplying one or more adjacent agitating units. Altho the pulp is handled many times by the agitating unit in the course of its flow thru the mill the advantage claimed is that the fibres are neither bruised, cut nor hydrated. Tests have shown that the freeness after several days of agitation did not drop below 10 per cent of the original.

20,000,000 Gallons

All five units in the brown stock tank are supplied with Y-shaped transfer pipes directed so as to form a counter current flow in the chest, which speeds the travel of the stock. The acceleration increases the number of agitating cycles from the time the pulp enters the chest until it leaves at the opposite end. On the machine chest the fifth and last agitating unit, located near the discharge end of the chest is arranged to discharge its full capacity thru a pipe which extends the entire length of the chest into the new pulp entering the chest. The effect of the procedure is to continually mix old pulp with the new and thus insure a thoroly blended pulp going to the machine wire.

In the 32′ by 32′ chest the units extend from the top of the tank to within one foot of the bottom and are installed near the side wall at equal distances from each other. The pulp is delivered by each agitator from the bottom of the chest to the top and then discharged thru transfer pipes extending the full distance across the chest to a point equi-distant between the other two agitators. This sysem also defines definite zones of discharge which overlap.

Twenty million gallons of water daily is quite a river to move. When many unusual specifications are imposed in addition the task is many times multiplied, but pulp mill hydraulics, like all other science and engineering today, is a subject which is making rapid progress.



Clean pulp requires clean, colorless, water in abundant quantities. Here is shown the control house of the twenty million gallon water treating and filtering plant of the new Weyerhaeuser mill. Control is centralized and simplified so that one man per shift can take care of the plant. Technical control of the mannufacturing process begins with the water supply and covers all mill activities.

ADVANCED PULP MILL INSTRUMENTATION

THE modern idea in pulp manufacturing is to free the operator from the necessity of manually controlling processes which can be more effectively controlled by automatic instruments. The idea is not to eliminate the human factor but to stimulate it to greater creative effort. Effective instrumentation performs a three-fold function. It registers current conditions; automatically activates the controls within predetermined limits; and provides a permanent record of operations at a given point.

The high standards of quality and the exacting specifications now demanded of the pulp manufacturer by the paper industry have made it imperative that rule of thumb be supplanted with rule of instrument. Satisfactory production can only be assured if full information of the state of the manufacturing process is available.

Since the whole aim of the Pulp Division of the Weyerhaeuser Timber Company has been toward the production of pulp of superlative quality, unusual care was exercised in selecting instruments for process control. More than a day-by-day knowledge of conditions was essential. What Weyerhaeuser's engineers developed in collaboration with engineers of the Foxboro Company in the way of an instrumentation system is believed to surpass previous pulp mill practice in the diversity and thoroness of application in a desire to achieve the goal of pulp uniformity.

Starting in the acid plant, records of temperatures in the sulphur burners are obtained with Englehardt recording pyrometers. From this point onward thruout the plant practically all of the instruments for recording and controlling process conditions were supplied by the Foxboro Company of Foxboro, Massachusetts.

Accurate control of water to acid towers is made easy with the aid of a recording orifice meter installed near the six-way valve, and a record is kept of temperature of the cold gas as it leaves the cooler.

Probably the most complex process encountered in the manufacture of pulp and paper is in the cooking of sulphite pulp and in many respects the instrumentation in the digester house is as unique as it is complete. To insure uniform conditions of pressure and superheat in the process steam, automatic pressure and temperature controllers are installed near where the steam main from the boiler house enters the cook room, and a recording and integrating flow meter gives a record of the total steam consumption in the digester house. Installed near the master control board there is a double panel on which are mounted six recorders to show the temperature, pressure and liquid level in each of the two Chemipulp System Accumulators.

The usual recording thermometer is installed on each of the six 15-ton digesters, but there the usual procedure has been departed from for, instead of the conventional controller for maintaining the desired pressures within the digester by controlling the steam input, with manual control of relief, provision has been made for automatic control of steam input and of relief as entirely separate problems. Close control of digester pressures is maintained by a pressure STABILOG, operating a controlled valve in the top relief system, on each digester.

With control of digester pressure maintained at a constant, irrespective of steam input, it becomes possible to maintain a steady flow of steam at the rates necessary to produce the desired temperature curves.

One digester is equipped with a flow STABILOG which gives fully automatic control of the steam input and a chart record thereof, and the flow meters on the other five digesters are so arranged that the STABILOG feature readily can be added.

In the machine room the same general control procedure has been followed. The proper drying of pulp is a very exacting process and in order to insure the most favorable conditions thruout the drying cycle, multiple control has been adopted in the different sections of the Minton Vacuum Dryer. In addition to removing the condensate from the rolls, the Fulton System is depended upon to maintain proper heat balance conditions between the first and second sections. Primary control of the first and second sections, and independent control of the third section are effected by Foxboro Pressure Recorder-Controllers, the instrument on the third section having a range of 0-40 lbs. absolute to permit control at low steam pressures.

Recording and indicating vacuum gauges are applied on the machine casing, and a recording gauge with a range of 0-40 lbs. absolute is installed on the steam header to each section of the dryer rolls. A de-superheater recorder-controller is installed to provide uniform steam conditions, and a recording and integrating flow meter measures the amount of steam used by the machine.

Recording and indicating liquid level gauges are installed in stock tanks, blending tanks, white-water tanks, etc., in locations to suit the convenience of operators, and the instrumentation picture is completed by nine recording thermometers installed in the primary and secondary bleach tanks.

In addition to the instrumentation mentioned exact control of operations is aided by the use of scales and consistency regulators installed at strategic points. Wherever materials are introduced into the process weights are taken and recorded. For example, chemicals introduced into the filter system for water treatment are weighed. Sulphur and limerock are weighed as they go into consumption. Bleach chemicals are automatically weighed and the amount and time of their introduction is recorded. Consistency regulators and water metering devices control stock dilution in the process and measure the quantities of water added at different points.

Charts from all of the various operations are received by the Technical Control Department the day after they are made, where they are computed and interpreted, and the character and extent of the records thus available readily enables operators in charge to keep unusually close check on process conditions to the fullest possible extent and to make desirable changes therein with a minimum time loss.

The larger view gives an idea of the exceptionally large sized Oliver units used for washing and thickening in the bleach plant. The smaller view shows apparatus for automatically weighing the bleaching chemicals and for recording time of introduction and amount. Consistency is closely controlled in all stages. Makeup water is metered and recorded. Valves are hydraulically manipulated from one floor.

TECHNICAL CONTROL OF MANUFACTURING PROCESSES

PRODUCTION of a uniform, clean, high quality pulp depends on a rigid control of the many variables entering into the complicated manufacture. As the emphasis on uniform quality influenced design in every department of the new 175-ton bleached sulphite pulp mill of the Weyerhaeuser Timber Company, it was to be expected that a well equipped laboratory, competently staffed, would be a necessary part of the mill. R. B. Wolf, manager of the company's Pulp Division, has long been known as an ardent advocate of technical control.

The laboratory itself was arranged by the technical director, Ralph Hansen. The department occupies roomy quarters in the main line of buildings, handily adjacent to the machine room. It is believed to be one of the most modernly equipped pulp mill laboratories. The equipment includes all standard items found in the conventional pulp mill laboratory, but great emphasis has been placed on securing the best of everything. The laboratory is prepared to run every physical test and practically every chemical test to which pulp is subjected. In addition to the ordinary facilities, the equipment includes a carefully designed constant humidity room, a refrigerating unit, and high and low density bleaching equipment.

At the Weyerhaeuser mill, technical control is designed to be much more than an inspection service conducting routine tests. This department is charged with keeping a finger on operations in every section of the mill and providing the management with summarized information that will permit comparison with performance of the previous day, month or year.

All variables are plotted. Nothing is left to chance or guess. Exact information is the cardinal rule in operation. Detailed reports are received daily from the water filter plant, the chipping plant, acid plant, digester building, bleach plant, blowpits, and the machine room. These daily reports have been developed to fit the specific needs of each division of the mill. Space is provided for recording periodic information on condition, movements of the operator in manipulating controls, the quantity of materials added or drawn off and the time of each action.

The daily reports are turned over to the technical director once in every 24-hour period and the essential information is plotted graphically on a series of large specially developed charts. One chart is provided for each mill department and shows day-by-day operations for the current year. At the left of the chart operations are shown for the past year on a monthly average basis and in an adjoining column operations in terms of annual averages are shown for the preceding six years. For example, the filter plant will show in graphic form the total water input, the percent of water used as wash water, power consumed, alum added, lime added, chlorine parts per million, etc. The detail of these charts provides the management with an immediate picture of current operations in the department and a quick reference to performance in past months and years.

The key charts are kept in specially designed cabinets in the laboratory but duplicate charts are posted and kept current in the individual mill departments represented. This carries fundamental information to the men in the mill, thus stimulating interest in the individual workman in the efficiency of his department. The department charts are an incentive to department foremen to improve operations under their jurisdiction. It is the belief of the management that the workman will do better work if he has an understanding of the fundamentals that his part of the mill is attempting to achieve. This aroused personal interest is interpreted in better performance of the department, the elimination of wide variations in the curves. Further, the charts are educational and help the management discover employes who are capable of larger responsibilities.

The technical control department is comprised of a staff of men under a technical director. The staff includes an operating chemist, an analytical chemist, the usual shift testers, and in addition three shift chemists and an instrument man.

The shift chemists are in a sense roving aides who travel around in the mill practically all of the time. Their duty is to observe operations, to be alert for better methods, and to extend cooperative assistance to the different department heads and operators. The instrument man is charged with the proper maintenance of all control instruments in the mill. The centralization of this function under the technical control department places the responsibility for accurate recording of performance in the proper place.

Technical control of operation has of course been greatly facilitated by the installation of recording and controlling devices in all departments of the mill, many in new and distinctly unique positions in regard to convential pulp mill practice. As an example, a scale has been installed for weighing bleaching chemicals and automatically recording the time of introduction and the quantity added.

In operation the technical control department plays an extremely important and vital part in all conferences that are held with all key operating men. Current operations as revealed by the daily reports are discussed by the group and where variations are noted the cause is sought and suggestions entertained for improvement. Discussion, to be productive, must revolve about recorded facts, otherwise it is not creative.

Last, but not least, the technical control department ties in very closely with the sales department. This is in line with the growing trend to equip the pulp salesman with exact technical information. The Weyerhaeuser company's sales representatives have an intimate acquaintance with their mill's laboratory practice and are thus able not only to interpret the daily laboratory reports they receive on production, but are qualified to communicate in language understandable to the mill the technical pulp requirements of the customer.

HIGHEST *Quality*

BLEACHED *and* UNBLEACHED SULPHITE PULP

RAIL AND CARGO SHIPMENTS

Airplane view of our new 175-ton bleached sulphite pulp mill completed in November 1931, situated on the Columbia River at Longview, Washington. Cargo shipments are made directly from the dock at the extreme left center.

Bleached and unbleached sulphite pulp of the highest quality is now being produced in our mill at Longview.

The mill has been designed and each piece of equipment selected with a single aim in mind — to enable our experienced operators to produce a uniform pulp, of the greatest cleanliness, highest strength and brightest color.

Production is under definite control at all stages through the wide employment of recording and controlling instruments backed in every department by men having years of experience in sulphite pulp manufacture.

Weyerhaeuser bleached and unbleached sulphite pulp is now offered to paper mills desiring a dependable source of highest quality pulp.

WEYERHAEUSER FOREST PRODUCTS

PULP DIVISION

WEYERHAEUSER TIMBER COMPANY

LONGVIEW, WASHINGTON

Ross Equipment Will Heat and Ventilate

THE NEW MODERN PULP MILL OF THE

Weyerhaeuser Timber Company

Longview, Washington

Collaborating with Mr. O. C. Schoenwerk, Consulting Engineer of the Weyerhaeuser Timber Company, Ross engineers designed and installed the Heating and Ventilating and Vapor Exhaust Systems for this new Pacific Coast pulp mill. The main Ross Heating and Ventilating System is designed to take care of the requirements in the wet end of the machine room which houses a Minton type pulp dryer. It will also maintain ideal conditions in the breaker beater room. Ross Unit Heaters of the floor type will be utilized for heating the dry end of the machine room.

In the bleaching plant, there are four separate Ross Systems, each consisting of an exhaust fan and duct work from the top of the tanks to draw the vapor from the tanks, discharging it directly to the atmosphere.

Another modern mill — another Pacific Coast installation of Ross Systems.

There is always the need for good heating and ventilating — and the best system is the ROSS system —

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Main Office—122 East 42nd Street NEW YORK

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ROSS ENGINEERING OF CANADA, LIMITED
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

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RESPONSIBILITIES OF THE CONSULTING ENGINEER

By O. C. SCHOENWERK

Engineer in charge of design and construction of the new Weyerhaeuser mill.

IN the field of pulp and paper manufacture what is the function of the consulting engineer? Does he perform a real service? Is he worthy of his hire? In the succeeding paragraphs amplification of the answer to the first question will serve to answer the next two in the affirmative. In explanation of terms, "consulting" engineer is hereafter used in much the same sense as "designing" engineer.

In the first place, the consulting engineer may be compared with a physician. A man may feel that no one has a more intimate knowledge of his body than himself, yet, with the development of an ailment, or possibly on the sole desire to learn his condition of health, he will consult a physician. He makes such consultation because he knows that the physician has specialized in the study of anatomy, has the benefit of a wide perspective arising out of the observation of hundreds of individuals, and is trained to exercise a disinterested and impartial judgment. The analogy is evident between the man and the pulp-paper manufacturer who may be too close to his problem.

The first duty of the consulting engineer is to visualize the client's problem in the whole. It is not sufficient that he design a plant that will be structurally correct and equipped with well selected machinery. He must be able to give competent advice on the economic aspects of the project, to answer such questions as: Is the contemplated plant too large, or too small? What market is offered for the product? What transportation facilities must be considered with respect to market? What trends in the industry are evident making it necessary to provide for meeting changing conditions?

If diligent analysis of these preliminary factors does not disclose a project that is sound in every respect it is the duty of the consulting engineer so to inform his principals. It is futile to embark upon a discussion of the technical structure of the proposed project unless the economic factors are favorable. The responsibility of the consultant is to develop for his clients a plant that will produce a profit. A willingness to guarantee that end is taken for granted.

Assuming the economic factors to be favorable, the consultant is next expected to pass expert judgment on the specifications of building materials, equipment, the arrangement of buildings. Having harmonized allowable expenditure with ultimate goal, the responsibility now rests with the consultant to provide the most mill that money can buy, for the work to be done. Such a policy can not be concerned alone with first cost of materials and equipment, but must weigh carefully the proposed use of same, taking care neither to overbuild nor underbuild. Estimated maintenance costs and deterioration must be given careful consideration.

As a specific example of the selection of materials on the basis of maximum performance consistent with cost the new bleached sulphite pulp mill of the Weyerhaeuser Timber Company can be cited. Reinforced concrete was used here for permanent walls, for floors subject to excessive moisture, etc. Concrete is a durable material and lends itself readily to moulding in any desired form. On the other hand, wood was specified for most building roofs, for all stock chests, all pipe lines above 6 inches in diameter, and in some cases for the complete building, as in the pulp warehouse and the chipping plant. The selection of wood was guided by factors of maximum utility, cost, and availability. In like manner specifications of the new type non-corroding steels for many applications in the mill such as blowpit drainer bottoms, acid valves, acid pumps, etc., was guided by the same principles.

Reference to the new steels, not hitherto employed on any extensive scale in pulp mill practice, suggests a further responsibility of the consultant. The client expects him to be currently conversant with new developments and to specify adoption if they will contribute to ultimate lower cost and more efficient operation. At this point the consulting engineer must exercise sufficient courage to leave the hard beaten paths of proven practice and demonstrate progressive thought by foreseeing the significance of the new and adopting it. However, deviations from conventional practice are never to be made at the expense, initially or ultimately, of the client. Upon the consulting engineer rests the entire responsibility for digesting the possibilities of

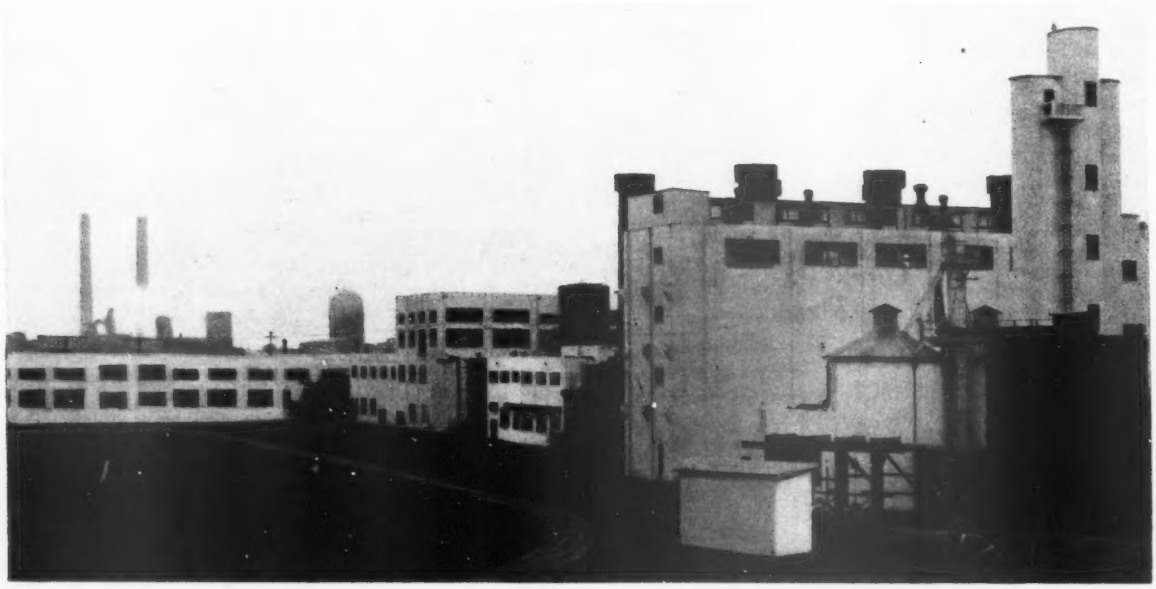
new developments, of specifying them if satisfied with their merit, and of absolutely guaranteeing performance and lowest cost to his principals.

The consultant has the benefit of perspective. He is in a favored position to survey the practice of many mills, to select superior examples of design and to improve upon them, to eliminate obvious mistakes and questionable methods, and to draw a composite picture which takes the best of each in a large group. A further quality which it is reasonable to demand of the consulting engineer is that he have a current knowledge of new methods and principles developed in other industries which may be borrowed with some adaptation for his own field. The advantage of enlarged viewpoint gained from looking beyond one's immediate sphere can not be over-emphasized. The paper industry today employs many methods which originated first with other industries in no way allied with the field. Conformation to established practice in pulp and paper manufacturing can often be a distinct vice and bar to progress.

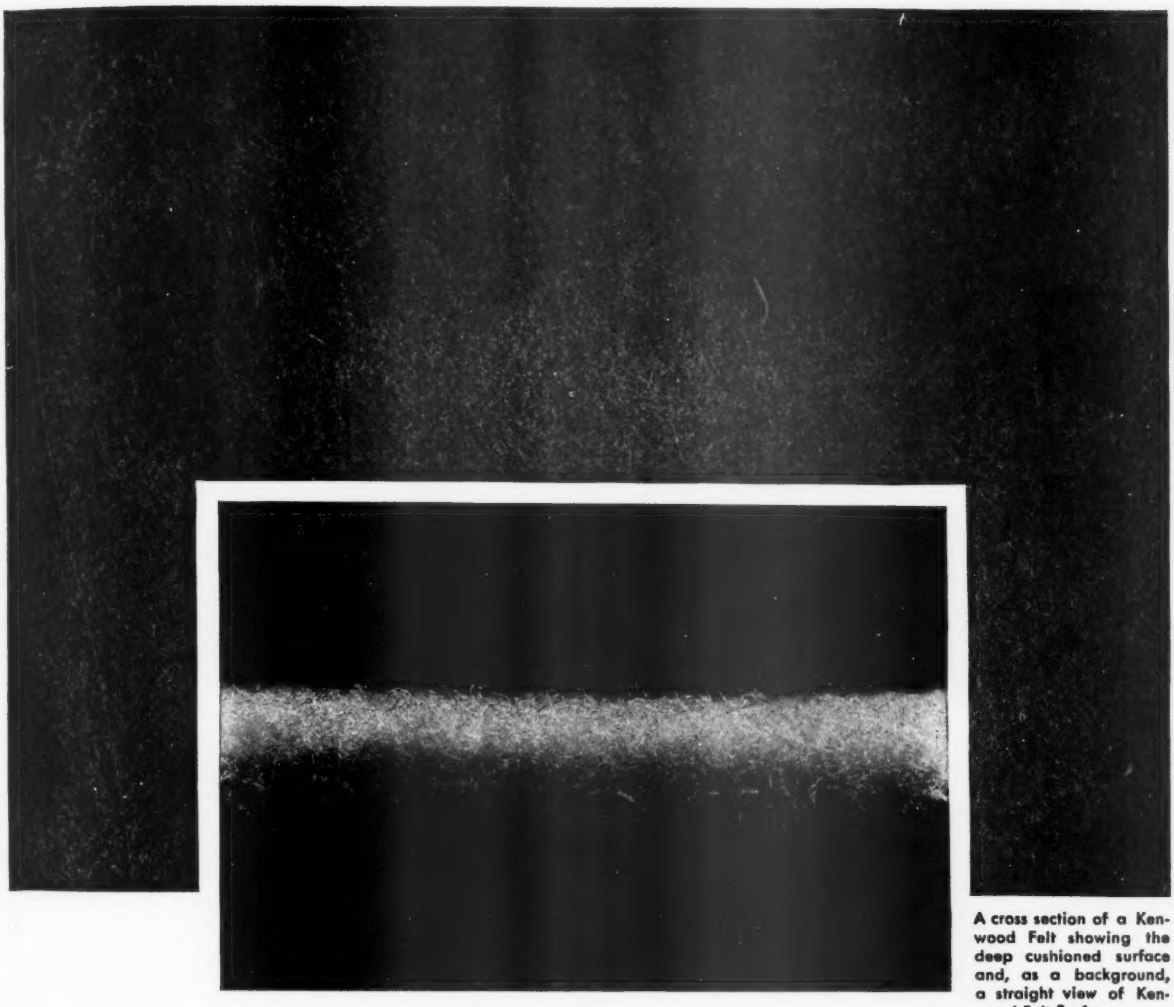
Mr. O. C. Schoenwerk is by no means a newcomer to the Pacific Coast. Years ago he managed a street railway system in Seattle. He knew Port Angeles, Washington, busy pulp-paper mill town of today when that community was a loggers' frontier town with wooden sidewalks. In later years he was manager of the Budd Wheel Corporation. About four years ago he actively identified himself with the pulp and paper industry of the Pacific Coast, playing an active executive part in the design, construction and operaton of several new mills.

It is not intended to argue that the consulting engineer must be a specialist in detail in every department of the mill. The ramifications of the pulp-paper manufacturing process preclude even the possibility of such knowledge, and such endowment can be more hindrance than help. However, it is imperative that the consultant have a thoro grasp of fundamentals involved, and the ability to correlate them. Competent detailed specialists are always available. To them can be delegated the specialized tasks. The consulting engineer must be able to select those to whom he may delegate authority, be able to judge their execution, and hold them to strict accounting for satisfactory performance.

The responsibility of the consultant is not concluded with the design, building and equipping of the plant. He must be willing to hand over to his clients a mill which he can guarantee will give satisfactory and profitable performance. Such responsibility does not end with turning the plant over to the operating force with the expectation that they will "iron out the wrinkles" if any develop. The client gets value received for the retainer fee only if the consulting engineer is willing to give this guarantee: "We will build for you a mill that will be economically right, thoroly modern in design, and profitable in operation. Our responsibility does not end until we have fulfilled that promise."



A view of the new sulphite pulp mill of the Weyerhaeuser Timber Company looking down the line from the water filter plant. The building layout proceeds in a straight line from the acid plant in the foreground to the machine room situated at right angles in the distance.



A cross section of a Kenwood Felt showing the deep cushioned surface and, as a background, a straight view of Kenwood Felt Surface.

SURFACE

Surface, when you speak of Felts, includes as its most important dimension—*depth*. Kenwood Tanned Felts are notable in performance and much of their satisfaction is due to a surface that leaves no imprint on the sheet throughout miles and miles of high production service. It's the live, resilient wool—the meticulous exactness of the yarn—the scientifically correct design. It is all of these, plus a thorough knowledge of paper mill practice that make the use of Kenwood Tanned Felts the soundest of economy in the production of Fine Papers, Newsprint, Wrapping or Board.

KENWOOD WOOL PRODUCTS

KENWOOD *tanned* FELTS

F. C. HUYCK & SONS
KENWOOD MILLS, ALBANY, N. Y.
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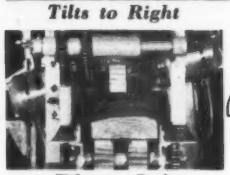
STETSON-ROSS 100% MOTORIZED AUTOMATIC BARKERS and KNOT BORERS FOR PULPWOOD

Tilts to Right



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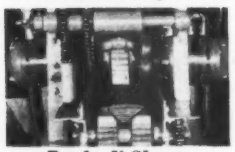
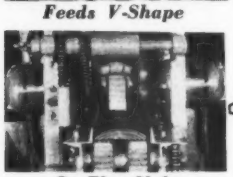
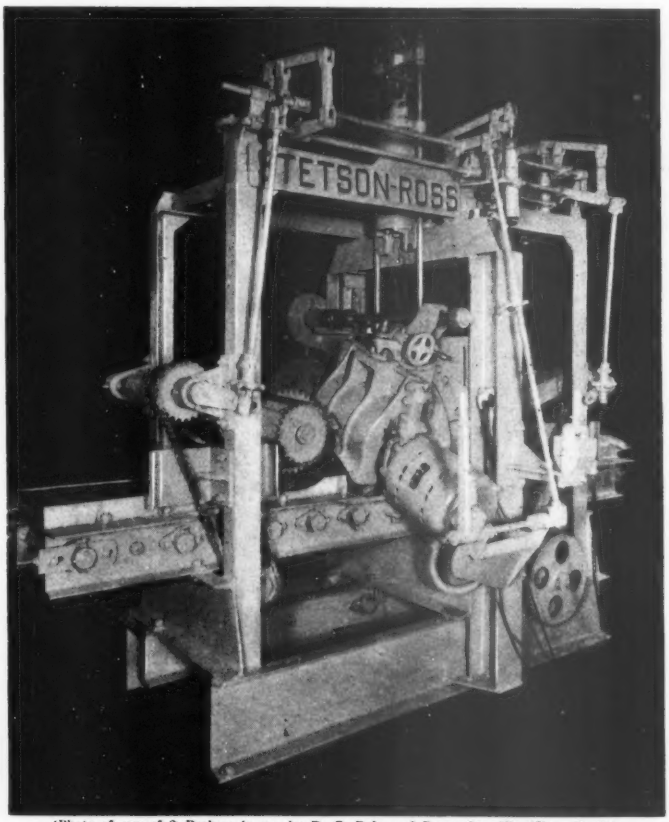


Feeds V-Shape



Or Flat Slab

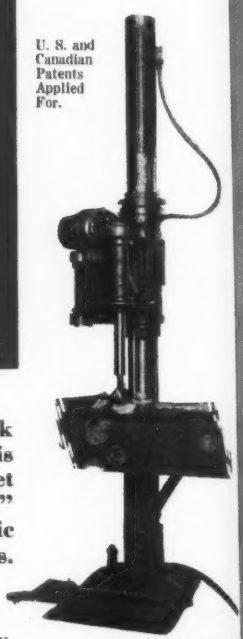
Thick or Thin



(Photo of one of 2 Barkers in use by B. C. Pulp and Paper Co., Woodfibre, B. C.)

SB-21 HAND BARKER
Built-in motor. Removable concave head.

U. S. and Canadian Patents Applied For.



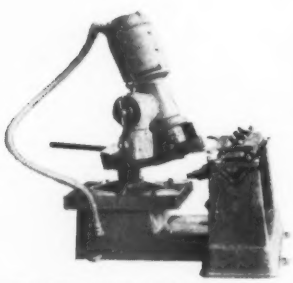
KB-23 RADIAL AUTOMATIC KNOT BORER.
Steam feed — stock tilted to permit boring toward heart.

WB-22 AUTOMATIC BARKER—
with concave head. Air or steam cylinder lift—electric motor tilt. Variable, reversible feed — machine in complete control of operator.

THE value of any machine is measured by the work it does. In pulpwood machines the question is "what is the maximum amount of clean chips we can get per thousand feet of logs and what is the cost per unit?" The keynote of Stetson-Ross 100% Motorized Automatic Barkers and Borers is high production and cleaner chips.

THE WEYERHAEUSER TIMBER COMPANY

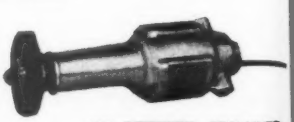
in its new, modern pulp mill wood room at Longview, Wash., is Stetson-Ross-Automatic-equipped for fine quality chips. Of the machines pictured on this page, the Weyerhaeuser mill has 4 Automatic Barkers, 5 Hand Barkers and 4 Automatic Knot Borers. Write for full details of these machines.



374 CONCAVE KNIFE GRINDER—
for grinding concave knives, for automatic and hand barkers.

Stetson-Ross is a name made famous by its high production planers in lumber mills on the West Coast.

There are no finer built, more efficient machines than Stetson-Ross 100% Motorized Planers.



373 PEEWEE GRINDER
¼ H.P., 12,000 R.P.M. Motor—for sharpening knives in any type machine.

STETSON-ROSS MACHINE CO. • • • *Seattle, U.S.A.*

When writing STETSON-ROSS MACHINE CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY

Felix Pagenstecher Named Hawley President

Felix Pagenstecher, for the past eleven years president of the Bryant Paper Company, of Kalamazoo, Michigan, has been named president of the Hawley Pulp & Paper Company, effective January 1, 1932.

Mr. Pagenstecher brings to the Hawley Pulp & Paper Company more than a quarter of a century of successful experience in the paper industry. One of his earliest positions was with the Riverview Coated Paper Company, of Riverview, Illinois, which was managed by his father, Carl Pagenstecher. It was in this plant that he received his thoro apprenticeship as a coated paper manufacturer by working in all of the departments of the mill as well as in the office and in the sales department.

In 1902 the Riverview concern moved its business to Kalamazoo, Michigan. Mr. Pagenstecher assumed the management of the reorganized company. The new company was a success from its beginning and in twelve years it trebled its capital as well as its capacity and paid its stockholders many hundreds of thousands of dollars in cash dividends.

This company was later consolidated with the Kalamazoo Paper Company. Mr. Pagenstecher was secretary of the consolidated enterprise and the executive in charge of sales until 1919, when he became assistant to President Frank H. Milham of the Bryant Paper Company. Two years later, upon the death of Mr. Milham, he was elected president of the Bryant Paper Company.

Competitive conditions in the industry required that a large part of the Bryant mill should be remodeled and thoroly modernized. This program was successfully carried out by Mr. Pagenstecher, which is considered largely responsible for the efficient operation of the Bryant company and the high standard of its products.

Mr. Pagenstecher was attracted to the paper industry on the Pacific Coast only after a thoro personal investigation of its possibilities. He considers Pacific Coast mills to be ideally located with respect to raw materials, transportation and labor conditions, and that a great future development is in prospect for the industry on the Pacific Coast.

Mr. Pagenstecher was formerly vice-president of the American Paper and Pulp Association and the Michigan Manufacturers Association, and is at present vice-president of the Kalamazoo Trading Company and director of Nashwaak Pulp & Paper Company, First National Bank & Trust Company of Kalamazoo, Citizens Loan & Investment Company, Kalamazoo Industrial Bank and Michigan Mutual Liability of Detroit.

Pulp Goes Down -- -- To Bottom of Sea

Several hundred tons of British Columbia pulp are either floating around somewhere in the North Pacific or are at the bottom of the ocean in the hold of the Tamaho Maru, which was abandoned at sea by her crew early in January. Included in the vessel's freight consignment was a large order of sulphite pulp from the British Columbia Pulp & Paper Company for Japanese ports.

FELIX PAGENSTECHER

Pulp-Paper Engineer From Finland Studies Coast

"You have here on the Pacific Northwest Coast a region that is abundantly endowed with resources to make it a world-important pulp and paper producing area. You have timber, water, hydro-electric power, coal, transportation. Your mills include some of the world's finest." This was the observation of J. E. Heiskanen, mechanical engineer from Jyvaskyla, Finland, who has been spending some time observing the Pacific Coast industry.

Mr. Heiskanen's experience in the pulp and paper industry goes back many years and covers an unusual amount of territory. He is a consulting engineer. He has been identified actively in the design and construction of a number of leading pulp and paper mills in Finland. He has traveled extensively over Europe and has a first hand acquaintance with the mills in a number of the nations on that continent. One of his recent assignments was the managership of a pulp-paper mill in Poland. About ten years ago he was associated in an operating capacity with kraft mills in the Southern United States.

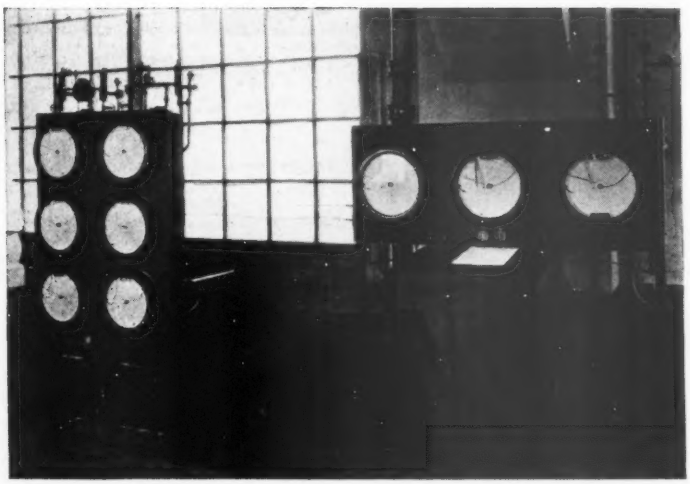
Commenting on the industry in Finland, which has made rather remarkable strides in the past decade, Mr. Heiskanen pointed out that thoro organization of the nation's mills for group effort was a chief contributing factor to their welfare. With respect to sales he told how the clearance of all orders thru a central agency served to eliminate harsh competition and to stabilize the market. Technical information is cleared thru a Central Laboratory. There is a full and free exchange of information on operation questions, including costs, between the mills of the land.

In matters of forestry the government has taken an aggressive leadership in building up the timberlands on a basis of perpetuity.

Seventh 34,000 H.P. Generator in Paugan Hydro Plant

Gatineau Power Company, a subsidiary of International Hydro-Electric System, has completed the installation of the seventh 34,000 H.P. generator in its Paugan, Quebec, hydro-electric plant, giving Paugan an installed capacity of 238,000 H.P.

• Complete • • • Instrumentation in the • Pulp Mill •



One of Six Digester Instrument Control Boards showing Foxboro Stabilogs, Flow Meters and Recorders at Weyerhaeuser Timber Company's new pulp mill.

FOXBORO
REG. U. S. PAT. OFF.
THE COMPASS OF INDUSTRY

INSTRUMENTS FOR CONTROLLING, RECORDING, AN

When writing the FOXBORO CO. *please mention* PACIFIC PULP AND PAPER INDUSTRY

● Working in full co-operation with Weyerhaeuser's engineers, Foxboro engineers designed the most complete project of Instrumentation yet attempted in a pulp mill. The combined talents of the pulp engineers and the instrument engineers resulted in instrument control far beyond the dreams of yesterday.

● From the acid room to the machine room, instruments control those operations, upon which the quality of the pulp depends. This means satisfactory production of super-quality pulp.

● Foxboro has the Engineers, the Experience and the Instruments necessary to solve every problem in control of Temperature, Pressure, Flow or Level in the pulp and paper mill. Together with your own engineers they will be glad to make an Instrument Survey of your present or proposed plants.

● Whether you want complete Instrumentation or a single instrument, you can get it from Foxboro. Complete information on our instruments or service will be sent promptly.

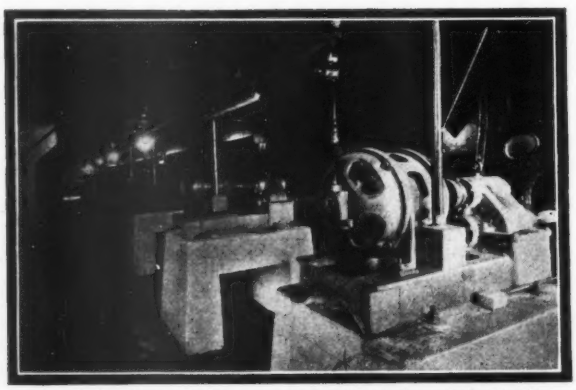
THE FOXBORO COMPANY

FOXBORO, MASS., U. S. A.

BRANCHES IN ALL PRINCIPAL CITIES

AN INDICATING TEMPERATURE, FLOW, HUMIDITY, AND PRESSURE

NOTHING WASTED-- AT LONGVIEW-----



Twelve of the sixteen 20-hp. new type CS Westinghouse Induction Motors with the renewable Pre-wound Core driving Smith & Valley Flat Screens.

Bingham Centrifugal stock pumps, driven by 40 and 50-hp. Vertical Type CS Motors, built in Westinghouse Emeryville Works. High grade insulation, dual-protected against moisture, assures long life and great reliability.

WITH the addition of the new Pulp Mill to its plant at Longview, the Weyerhaeuser Timber Company successfully completes a project, planned to be the most efficient and the most outstanding of its kind in the world. Every particle of the log is converted into a product of value—into lumber, into pulp and into electric power.

Nor does efficient conversion stop here. The electric power itself is then converted into mechanical horsepower at an average plant power factor of more than 95%.

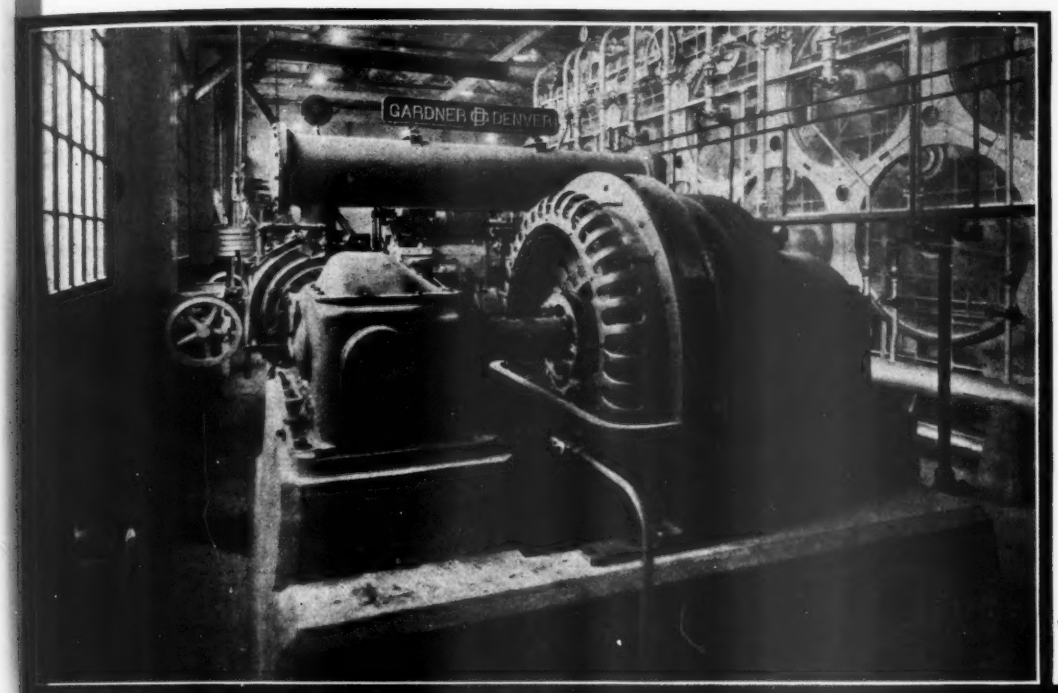
Based upon a detailed engineering study, a scientific balance between induction and synchronous mill motors was achieved, bringing about this very efficient operating condition.

As a result of this planning, the first cost of the electrical equipment is relatively low, the generating, transforming, switching and line capacity is used most effectively and the plant voltage is uniform and normal.

Westinghouse Electric congratulates the Weyerhaeuser Timber Company on this splendid economic development and considers it a privilege to have participated in furnishing the equipment.

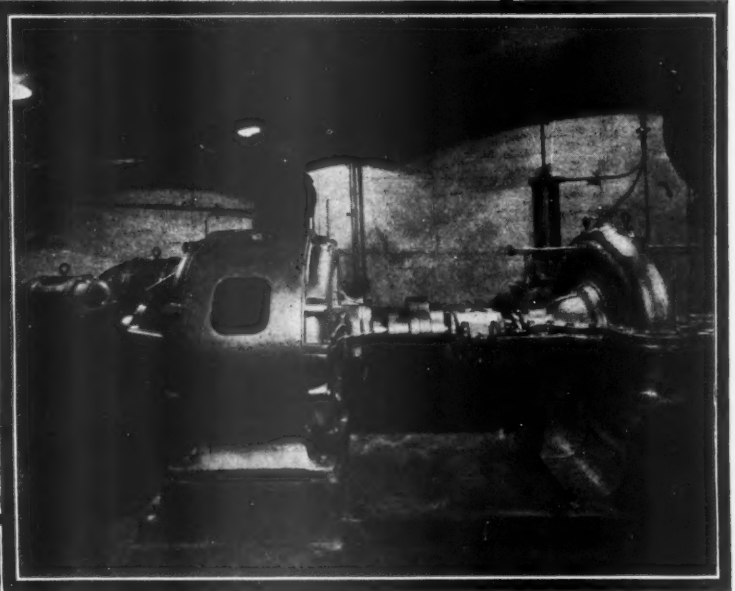
Westinghouse

T 31957

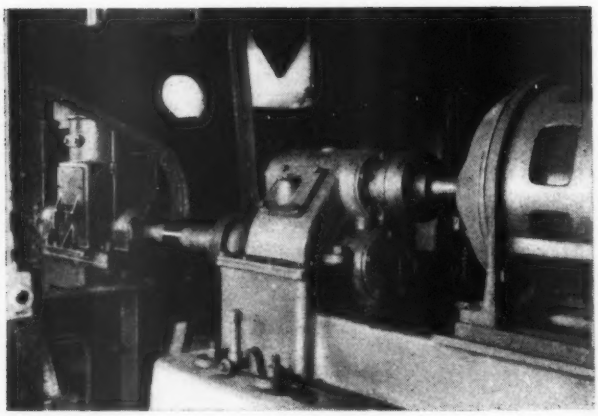


Above—Westinghouse 60-hp. Synchronous Motor driving Gardner Denver Compressor in the modern pulp mill of the Weyerhaeuser Timber Company at Longview, Washington.

Right—Westinghouse 450-hp. Synchronous Motor driving Allis-Chalmers Centrifugal pump. Mica insulation and dual-impregnated windings assure ample protection against moisture.

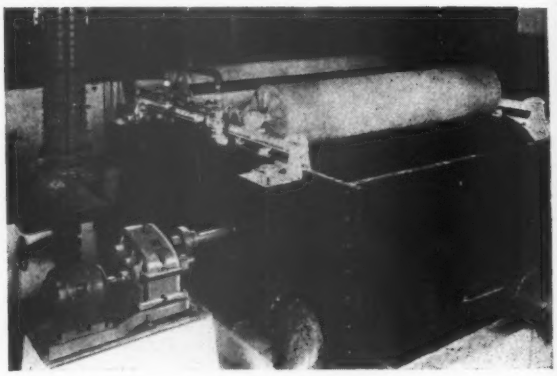


One of the two 250-hp. Westinghouse Synchronous Motors driving Sumner Iron Works Chippers. Having high torque, these motors can easily handle the high peak loads.



At left: One of the sixteen WESTERN HERRINGBONE GEAR SPEED REDUCERS driving flat screens.

Below: One of the deckers being driven through a WESTERN HERRINGBONE GEAR SPEED REDUCER.



WEYERHAEUSER SELECTS WESTERN SPEED REDUCERS

The dependability and uniformly satisfactory operation of WESTERN SPEED REDUCERS in their Northwest lumber mills, caused the WEYERHAEUSER TIMBER COMPANY to choose WESTERNS for the new pulp mill at Longview, Washington.

WESTERN SPEED REDUCERS are operating day in and day out under the most severe conditions with the utmost satisfaction. Among the pulp and paper mills that depend upon WESTERNS are:

Washington Pulp & Paper Corp.
Crown-Willamette Paper Company
Longview Fibre Company
Grays Harbor Pulp & Paper Company
Rainier Pulp & Paper Company
Puget Sound Pulp & Timber Co.
Inland Empire Paper Company
International Wood & Sulphite Co.
Fibreboard Products Company
Powell River Company, Ltd.
Shaffer Box Company
Olympic Forest Products Company
St. Regis Kraft Company
Pacific Mills Limited

WESTERN RIGHT ANGLE SPEED REDUCER driving agitator on stock blending tank.

WESTERN manufactures EVERY TYPE of speed reducer right here on the Pacific Coast, including

Horizontal Type Herringbone Gear
Vertical Type Herringbone Gear
Horizontal Type Right Angle Helical Gear
Agitator Type Right Angle Helical Gear
Standard Types of Worm Gear
} **Speed Reducers**

Our engineers are available instantly for work on any power transmission problem. Pick up your telephone and call MAin 0062 Seattle, or ATwater 3852, Portland.

"Get Your Gears from Gear Specialists"

Western Gear Works
SEATTLE, WASH.
Associated with **PACIFIC GEAR & TOOL WORKS** Incorporated
SAN FRANCISCO PORTLAND PACIFIC COAST PRODUCTS EL PASO LOS ANGELES

WESTERN GEARS

When writing WESTERN GEAR WORKS, *please mention* PACIFIC PULP & PAPER INDUSTRY

T-R-A-D-E - T-A-L-K

Devoted to the Paper Trade of the Western States

Portland B. M. & T. Holds Banquet

The Northwest offices of Blake, Moffitt & Towne in Portland held their annual sales conference during the week between Christmas and New Year's Day, salesmen and out-of-town representatives coming in for the meeting. The conference concluded the evening of December 30 with a banquet at The Sign of The Rose, attended by some forty sales representatives, department managers and officers.

As a result of the conference the sales force determined to go out after business in earnest in 1932, ignoring the depression.

At the banquet W. P. Phillips, credit man, spoke on financial conditions in the territory and advised the necessity of keeping accounts close.

F. C. Wasserman, secretary-treasurer, spoke of the need for greater efficiency in accounting and selling. At such times as these, he said, the buyers demand the utmost in service and should get it. Otto W. Mielke, Northwest president, spoke on general conditions as they affected the Pacific Coast. He maintained it was useless to stand on the sidelines and accept the general statement that a depression existed and wait for business to come in. They had been waiting a year and a half now, he said, and the business prophets had been proven false. The only thing to do, he said, was to buckle down and get business and make good times.

Denver Firms Hold Annual Meetings

Annual stockholders and salesmen's meetings were the order of the day for two Denver firms during the holidays. The Butler Paper Company held a salesmen's meeting on December 28 going over sales plans for 1932. The Carter, Rice and Carpenter Paper Company held a meeting of salesmen of floor coverings the morning of December 28 and that afternoon held a general salesmen's conference. A stag for all male employes was held at the Chamber of Commerce the evening of December 28. The annual stockholders meeting of Carter, Rice and Carpenter will be held on January 26.

Buckley-Lynch Quits Business

Buckley-Lynch, Los Angeles wholesale paper house, formed last year by Emmett W. Buckley, well known Pacific Coast paper man, has discontinued business, according to an announcement by Mr. Buckley.

"It is not lack of business that is forcing us out," said Mr. Buckley, "but scarcity of funds to carry a complete enough stock to give the trade proper service."

Mr. Buckley will continue in the paper business with offices in the Calo Building, 443 South San Pedro Street, Los Angeles.

Rag-Content Paper Prices Down

Effective January 4 all manufacturers of rag-content papers made substantial reductions in their prices, in line with recent reductions in sulphite papers. It is understood that the jobbers generally are passing these reductions on to the consumers.

More Agents Distributing Howard Papers

A decided increase of agents for Howard bond, ledger and mimeograph in 1931 over the previous year is reported by the Howard Paper Company, Urbana, Ohio, which the company points out as proof that quality is recognized by distributors throughout the United States.

Thirty-three new agents have signed up with the company to represent the Howard line during the year, establishing a new record in the number of distributors added by a paper company in 1931.

Howard bond and its companion papers are now represented in practically every part of the country as well as abroad.

Ever since the company's inception a quarter of a century ago, it has enjoyed a steady growth, until today it is recognized as one of the most prominent manufacturers of bond papers. At the very beginning officials of the Howard Paper Company established a program of standardization which has been responsible for its continued success. Starting with Howard bond, they have retained its identity throughout the years, causing it to be recognized as a practical allround bond.

Blake-Moffett & Towne are distributors of Howard paper in the western states.

Boy Scouts Honor William Howarth

The Boy Scouts of America have paid special honor to William Howarth, president of the Everett Pulp & Paper Company by conferring upon him the order of Silver Beaver. This is a national honor which goes only to those who have performed distinguished service to boyhood. Mr. Howarth is first in the Northwest area to be awarded such recognition.

N. L. Brinker, district representative, Los Angeles, Hawley Pulp & Paper Co., has expanded his office suite in the Washington building.

George W. Ward, president, D. L. Ward Paper Company, Philadelphia, was a recent visitor to the Los Angeles paper trade.

PARTNER WANTED

To join with me on 50-50 basis in establishing a paper brokerage business with headquarters in New Orleans, covering southern states from Texas to Florida. I have an established trade with paper jobbers in much of this territory, 35 years' experience in the paper industry in the East, and the best possible credentials on ability and record.

The man desired must be a good salesman, well posted on qualities of book, sulphite bond, coated papers, etc., be able to invest $2,500 to apply on expenses of incorporation, and a trip East to close with paper mills who have offered representation of their lines. Ability and record must be demonstrated.

A company will be organied with capitalization of $150,000 in preferred and common stock. The proposition is clean and will prove a money-maker. In replying address D. B., 1826 North Van Ness Avenue, Hollywood, Calif.

Dried Fruit Shipped to Germany in Fiber Containers

The first shipment of American dried fruit packed in fiberboard cases that has ever been received in Hamburg and, it is believed, the first consignment of the kind to reach Germany, arrived at that port recently, according to the Department of Commerce. It consisted of 500 cases each containing 12.5 kilo (26½ pounds) net of California raisins.

The shipment arrived in very good condition. When examined in the warehouse at the dock only one box showed evidence of rough handling, but that was still in perfectly good condition for forwarding to the interior.

There is only a limited sale of dried fruit in small cartons in Germany, owing to the expense involved in using this packing and the high price at which it must be sold, and no dried fruit is imported in this form of packing. One or two firms in Southern Germany are fairly well known to the trade as packers of dried fruit in this form, and small amounts are put up for the large cooperative sales organizations; but it is not generally sold in retail stores and is regarded as a luxury.

Prunes are most frequently packed in cartons, generally after having the pits removed. In this form they are usually eaten without cooking, like candied fruits. Mixed fruits also are packed in this manner and may be eaten as they are, but are generally cooked.

West Linn Goes Back on Six-Day Week

The 350-ton news print mill of the Crown Willamette Paper Company at West Linn, Oregon, went back on a six-day week December 28. The plant has been running at a much reduced capacity for the past several months.

Roberg Returns From Orient

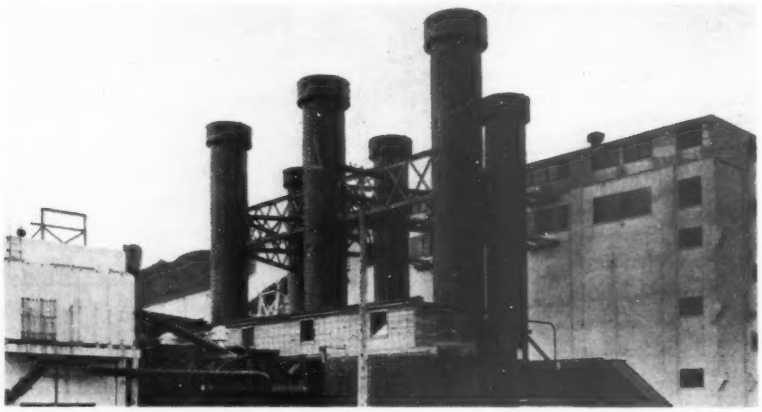
Ralph Roberg, manager of the Bellingham division of the Puget Sound Pulp & Timber Company, returned recently from a trip to the Orient. While the two months' trip was primarily in the interest of pulp sales, Mr. Roberg nevertheless found opportunity to sound out general economic and political conditions in Japan and China.

Under Japan's domination Manchuria has forged ahead, it was pointed out upon his return. Order has been returned to the vast province which is literally the granary of the Orient. At present there are some 1,200,000 Japanese nationals in Manchuria, but the greatest additions to population in recent years have come from the vast influx of Chinese farmers. The latter have been attracted under the more peaceable conditions that are obtained under Japanese influence.

Sweden's New Ostrand Sulphate Mill Completed

The Swedish Pulp Company's large sulphate mill at Ostrand outside Sundsvall is now ready, and the trying out of the various departments has now been gradually begun. On December 11, the first trial-cook was made. Regular work expected to begin in the mill after the New Year.

The Ostrand establishment is the largest sulphate mill ever built in Europe, and has a production capacity of 75,000 tons per annum, which later on can be extended to 100,000 tons. Its technical equipment complies with the highest modern demands, and we hope later to have an opportunity of giving a detailed account of this interesting plant.



WEYERHAEUSER PULP IS KEPT CLEAN

by . . .
NATIONAL QUALITY
WOOD TANKS and
WOOD PIPE

Cleanliness of the finished pulp was one of the paramount aims of the Weyerhaeuser Timber Company in designing and building the new sulphite pulp mill at Longview.

"National Quality" wood tanks and wood pipe were selected because they are clean and there is nothing to scale off and discolor the pulp.

Their acid tanks, blow pits, vomit stacks, stock tanks and water tanks together with many thousand feet of wood pipe for stock and water lines are all "National Quality" products.

NATIONAL QUALITY

NATIONAL TANK & PIPE CO.
KENTON STATION, PORTLAND, OREGON

L. A. DeGuere Sails For New Zealand

The R.M.S. Niagara sailing for New Zealand on January 6 carried L. A. DeGuere, pulp and paper mill consulting engineer. Mr. DeGuere will go to Auckland where he will do some work for Timberlands Woodpulp, Ltd., an extensive timber-owning organization that contemplates the construction of a pulp mill for utilization of its resources.

Two of the New Zealand representatives recently made an extended tour of the United States and Canada, spending several weeks in the Pacific Northwest in tour of the newer pulp and paper mills. Their trip carried them as far east as New York and as far south as Florida. In Wisconsin they visited several mills in the company of Mr. DeGuere.

Mr. DeGuere is well known on the Pacific Coast, where he has been active in the past several years. He expects to return to the United States via San Francisco, arriving there on March 11.

Perkins-Goodwin Company Increases Capital

Perkins-Goodwin Co., pulp brokers, 551 Fifth Avenue, New York, has just increased its capital stock by $500,000, all paid in cash. This brings the total capitalization of the company up to $1,700,000, consisting of $1,000,000 preferred and $700,000 common stock.

This increase was made to provide additional funds to take care of its expanding business which, during the last ten years, in spite of lower prices for both paper and pulp, has increased over 300% in dollar volume.

Lower Prices on Falk Speed Reducers

A lower schedule of prices on various types and sizes of speed reducers has been announced by the Falk Corporation, Milwaukee.

Falk standard speed reducers are made in single, double and triple reductions, both horizontal and vertical, for parallel shaft and right angle drives. There are 17 types in 202 sizes, ranging from 1,000 H.P. down to .05 H.P., with 133 standard ratios from 1.5:1 to 518:1. Price changes apply to all sizes in common use.

Port Townsend Mill Holds School

The Port Townsend, Washington, plant of the National Paper Products Company has opened a school to teach the methods of manufacture in its paper mill. Classes will be held every Tuesday evening. The first class attracted a large turnout of employers and employes. Classes will be conducted by the foremen and managers of the different departments of the concern.

AMERICAN PAPER AND PULP ASSOCIATION
New York

December 31, 1931.

OUR 55th ANNUAL PAPER WEEK
Will Be Held As Usual

The Dates—February 15th, 16th, 17th and 18th.
The Place—The Hotel Pennsylvania, New York.

TO MEMBERS:

Going back through the long and notable history of the American Paper and Pulp Association, one is impressed by the fact that some of the most fruitful meetings were held during periods of storm and stress and trial. In fact the disturbed conditions of business in the seventies were directly responsible for the first meeting of the Association at Saratoga Springs in the year 1878.

Curiously enough, a boom began shortly after that first meeting during which prices rose and the capacities of the mills were strained to meet the demand. In the recession which followed two years later however, newsprint fell to the ruinous price of $130 a ton.

In January, 1895, the Association met at old Delmonico's in New York. The members were shrouded in gloom and pessimism for they had back of them over two years of poor business. Col. A. G. Paine who was then president, made the definite statement that the bottom had been reached and an upturn was imminent. Within a few months business was climbing back to normal.

These were coincidences of course, but it is not impossible that the best minds of the industry in serious conference at our forthcoming meeting, may be able to contribute something towards creating another coincidence.

To that end, the sessions, the speakers and the subjects, will be attuned to the times. It will be a "brass tacks" convention, a reconstruction conference that will attempt to ferret out causes, and to apply prophylactics as well as remedies. Come prepared to do your share and to absorb new hope and courage.

Fare and one-half rates will apply on all railroads. Members will make their own hotel arrangements. Annual dinner on the night of the 18th.

Yours very truly,
JESSE H. NEAL,
General Manager.

Prosperity Is Straight Ahead

"Prosperity isn't around the corner; it's straight ahead," declared R. W. Mayhew, managing director of the Sidney Roofing & Paper Company, when addressing the Victoria Chamber of Commerce, of which he is president, a few days ago.

"We'll find business if we look for it," he said. "Business is like a teeter. It's either going up or going down. There's no question that it's down now, but it's sure to go up and it will go up just as soon as the business men of the country show a real determination to pull it out of the depths."

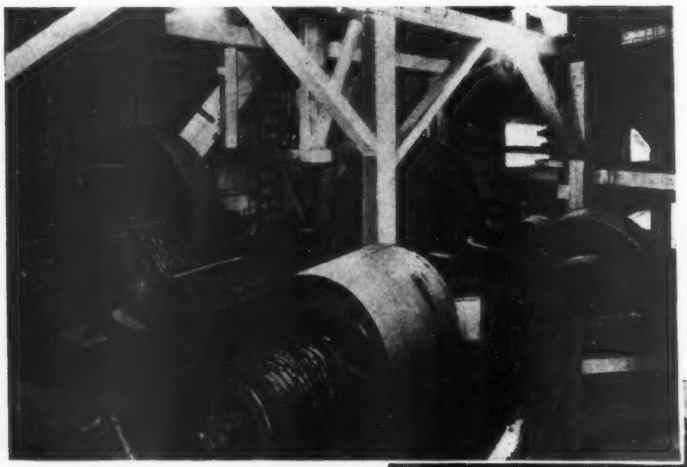
STATEMENT OF ACCIDENT EXPERIENCE—NOVEMBER, 1931

(Mills in the State of Washington)

COMPANY—	Hours Worked	Total Accidents	Frequency Rate	Days Lost	Severity Rate	Standing
Inland Empire Paper Co., Millwood	52,767	0	0	28	.531	1
Everett Pulp & Paper Co, Everett	51,150	0	0	0	0	2
Grays Harbor Pulp & Paper Co., Hoquiam	56,491	1	17.7	319	5.645	3
Rainier Pulp & Paper Co., Shelton	54,311	1	18.4	18	.331	4
Columbia River Paper Mills, Vancouver	43,619	1	22.9	25	.573	5
Crown Willamette Paper Co., Camas	197,189	7	35.5	6444	32.679	6
Fibreboard Products Inc., Port Angeles	26,148	1	38.2	2	.076	7
Fibreboard Products Inc., Sumner	22,120	1	45.2	18	.814	8
Longview Fibre Co., Longview	94,772	6	63.3	48	.506	9
Shaffer Box Co., Tacoma	12,514	1	79.9	28	2.237	10
Puget Sound Pulp & Timber Co., Everett	49,573	4	80.8	61	1.230	11
Puget Sound Pulp & Timber Co., Anacortes	11,920	1	83.9	6	.504	12
National Paper Products Co., Port Townsend	71,134	7	98.4	63	.886	13
Puget Sound Pulp & Timber Co., Bellingham	27,224	3	110.2	72	2.645	14
Washington Pulp & Paper Co., Port Angeles	51,164	11	214.9	81	1.583	15
Pacific Straw Paper & Board Co., Longview	13,925	3	215.4	37	2.657	16

The following mills not reporting: Pacific Coast Paper Mills. The following mills not in operation: Cascade Paper Co., Tumwater Paper Mills, St. Regis Kraft Co.

WEYERHAEUSER *selects*-



SUMNER
CHIPPERS
SCREENS
CRUSHERS

Partial List of Our Products:

SPLITTERS
BARKERS
KNOT SAWS
CHIPPERS
CRUSHERS
GRINDERS
SCREENS
DUSTERS
WET MACHINES
WASHERS
DRIVES

It is significant that the expert officials of the Weyerhaeuser Lumber Company selected SUMNER equipment for theirs, the newest and most modern Pulp plant on the Pacific Coast.

The 110" and 84" CHIPPERS are precision made, and of finest material, with alloy steel arbors, SKF radial load and thrust bearings. All parts of disc subject to wear are renewable. Spouts are of special design with correct cutting angles and fitted with double anvils.

The four 8'x18' CHIP SCREENS are notably outstanding compared to other makes in regard to details such as a rugged all rolled steel frame, oscillating eccentrics, rocker pivots and guides and an oscillating dust pan. All moving parts of CHIP and DUST SCREENS are designed for balance, producing a SCREEN of unusual quiet running.

CHIP CRUSHERS are sturdily built with cast steel disc and one piece base, alloy steel arbor fitted with SKF Bearings interchangeable, taper fitted breaker pins with support rings. Extra large spout with unobstructed discharge.

SUMNER IRON WORKS • EVERETT, WN.

Pioneer Pacific Coast Builders of

SAW MILL and PULP MILL MACHINERY

Leadbetter Staff In Annual Conference

Sales and production representatives of three Columbia River Paper Company plants, the Oregon Pulp & Paper Company of Salem, Oregon, Vancouver Paper Mills of Vancouver, Washington, and the Western Paper Converting Company of Salem, gathered in Salem December 21 for their second annual conference. All sessions were held at the Marion Hotel.

For two days and a half the salesmen, plant managers and other officials thrashed out their problems and exchanged opinions and information in the interest of furthering cooperation between the sales force and the mill men. Merchandising methods were discussed and adopted and sales policies laid down for the year 1932.

The evening of the second day, December 22, a dinner was given at the Marion Hotel for those in attendance. A. B. Galloway of Portland, sales manager of the Oregon Pulp & Paper Company and general manager of the Western Paper Converting Company, presided. No speeches were made, the dinner being purely informal and for social purposes rather than business. The conference closed at noon December 23.

Plant officials and executives and their assistants in attendance were E. J. Carey, manager, and J. D. Kaster, superintendent of the Vancouver mill; K. W. Heinlein, manager of the Salem paper mill; R. L. Galloway, Salem, manager of the converting plant; H. B. Tronson, accountant, and Mrs. Mae McClellan, secretary of the converting plant; Mrs. Vivian McElroy, secretary to A. B. Galloway, and J. E. Nail, San Francisco, representative in California.

Sales representatives present included, besides A. B. Galloway, who belongs to both groups, F. E. Skrivanic, Seattle, Northwest sales manager; Hays Rehm, Los Angeles; Paul Troeh, Portland; Arthur Colton, San Francisco; Arthur Lavell, Wenatchee; Taylor Alexander, Yakima, and B. F. Galloway, San Francisco, salesmen, and J. R. Flynn, Northwest sales representative, Portland. B. F. Galloway is the son of A. B. Galloway and brother of R. L. Galloway.

Colorado Paper Mill Sold By Sheriff

The Colorado Pulp and Paper Company at Denver was sold at a sheriff's sale on December 29 to the Colorado Paper Products Company. The bid price was $150,000 most of which is represented in bonds of the Colorado Pulp and Paper Company. The court order authorizing the sale had provided that bonds could be offered in lieu of cash. The only cash required was sufficient to pay court costs and costs of the sale.

Alonzo Aldrich, Beloit Iron Works President, Dead

Alonzo Aldrich, for forty-two years president of Beloit Iron Works, one of the most outstanding figures in the development of paper making machinery, died December 20, 1931. He had not been active for about five years.

Chipping Plant Destroyed by Fire

The pulp chipping plant installed about three years ago to work up sawmill waste at the Grass Creek mill in the Grays Harbor district of Washington was destroyed by fire on New Year's day. The sawmill was saved. The chipping plant had been idle. The fire is believed to have been caused by carelessness of itinerants who had utilized the shelter of the boiler house for sleeping quarters.

St. Helens Mill Celebrates Fifth Anniversary

On Christmas Eve in 1927 the St. Helens Pulp & Paper Company turned out its first paper amidst a local celebration commemorating the birth of a new industry. At that time it was a one-machine mill, turning out about 50 tons daily.

Under he guidance of Max Oberdorfer, general manager at the beginning of operations, and now holding the additional title of president, the mill has made consistent progress. Its operations have been unusually steady, its papers have acquired considerable fame for quality, the number of varieties has been increased, and several material additions have been made to the plant.

At first the entire tonnage was marketed as wrapping paper thru the Graham Paper Company. In time the Jaite Bag Company of Ohio established a branch adjoining for the manufacture of multi-wall valve bags. This absorbed some of the tonnage directly. Meanwhile the output of the mill was being steadily increased thru the refinement of the process.

Subsequently the company acquired the California Paper & Bag Company and moved that plant from California to a new building adjoining the paper mill. This diverted a further substantial tonnage for remanufacture. In the present year the company added a second paper machine and launched more vigorously into the manufacture of bleached kraft specialties and lightweights.

Other additions made to the plant in the five-year existence have included expansion of the beater room, addition of a small groundwood plant, and improvements in the recovery process. The present daily capacity is 100 tons.

Unpaid Land Taxes Halt Pulpwood Cutting

Persons removing timber from land on which taxes are unpaid may be prosecuted under proceedings now being promoted by Grays Harbor county through Deputy Prosecuting Attorney John C. Graham. Pulp wood cutters, contractors and land owners may become involved.

The first move to be made by the county centers on a half section of timber land owned by H. C. Heermans of Hoquiam. The tract is located west of Grays Harbor City and is involved in a $50,000 tax suit now before the Supreme court. A state law provides that it is a gross misdemeanor to remove timber from any land on which taxes are unpaid.

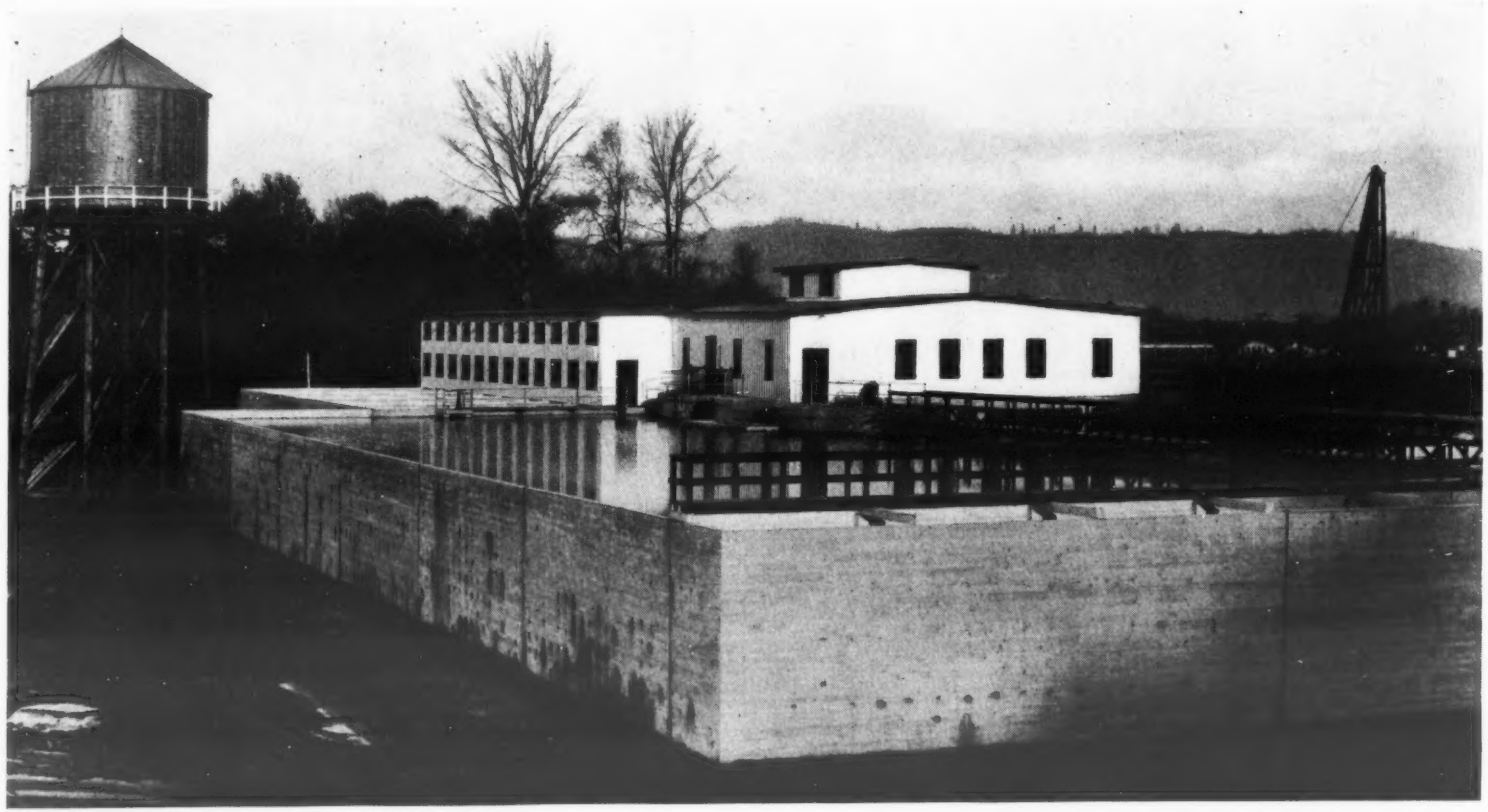
It is understood formal notices have been prepared for 50 persons, appraising them of the law violation.

Crown Willamette Mills Go on Eight Hours

Effective January 1 the Crown Willamette Paper Company's mills reduced the day shift from nine to eight hours. The action is in part guided by the desire to distribute the total number of jobs to a larger number of employes, thus avoiding the necessity of further reductions in personnel and making possible a greater stabilization of employment.

In order to bring about the new policy, the mill officials ordered that the wage scales of the men affected be raised on an average of several cents per hour to partly compensate for the one hour removed from the nine-hour shifts. This raise in pay per hour approximately makes up for the slight decrease in salary brought about by the shorter working day.

As a result of the new eight-hour policy all regular day shift workers will now report for work each morning at 8 a. m. rather than at 7 a. m. as in the past.



20,000,000 GALLON FILTER PLANT

Weyerhaeuser Timber Company's Pulp Mill • Longview, Washington

Designed and Built by CALIFORNIA FILTER CO., Seattle—San Francisco

New Types
New Models
New Machines

EQUIPMENT

Manufacturers of, and dealers in, equipment used by pulp and paper mills, board manufacturers, converting plants, paper merchants, or any other branch of the industry may make their announcements in this department.

New Dealers
New Branches
Appointments

Foxboro-Wilson-Maeulen Instrument Merger

The Pyrometer Division of the Wilson-Maeulen Company, Inc., has merged with The Foxboro Company. This action has followed 25 years of close and friendly cooperation between the two companies, and was made wholly in the interest of better service by thus being able to offer complete instrumentation to industry. The many users of Wilson-Maeulen Pyrometers will be served by a larger, more widespread group of instrument engineers.

The entire personnel of the Pyrometer Division of Wilson-Maeulen Company will be merged with that of The Foxboro Company, thus combining the knowledge and experience of the two organizations.

This merger has a significance beyond that of greater facilities. The Wilson-Maeulen Company specializes in the manufacture of electric indicating, recording and controlling Pyrometers and electric resistance thermometers for temperatures up to 3,600° F. Thus, by including the outstanding Wilson-Maeulen temperature instruments, The Foxboro Company can now offer a complete range of instruments of standardized quality.

The Wilson-Maeulen Pyrometers and controllers will be built in the modern, excellently equipped factories at Foxboro. All communications relative to Pyrometers should be addressed to Wilson-Maeulen Pyrometer Division, The Foxboro Company, Foxboro, Mass.

Deister Concentrator Company Makes Statement

That no misunderstandings may exist the Deister Concentrator Company has issued the following statement:

"The Deister Concentrator Company, incorporated 1906, is the original mining equipment company operating in Fort Wayne, Indiana, under that or similar style. Throughout twenty-five years of uninterrupted manufacturing and service specialized to separating equipment, the Deister Concentrator Company has produced and marketed under exclusive rights, patents or patents pending: Deister concentrating tables, Deister-Overstrom ore concentrating and coal washing tables, Deister and Overstrom self-oiling tble head motions, Leahy no-blind vibrating screens, Concenco foundry screens, Concenco flat pickers. It also has produced and continues to manufacture and sell classifiers and other equipment under the Concenco products trade-mark.

The Deister Concentrator Company has at no time relinquished or sold its patents or rights to the above equipment; and since its inception under the original Deister patents has produced or acquired all other patents covering extensive improvements to its equipment and for new equipment which the company owns or controls exclusively.

Dan Charles Opens Portland Office

Dan E. Charles, familiar to the paper industry of the Pacific Coast as paper expert for the Hearst publications, has opened offices at 201 McDowell Building, Seattle, and is representing the Green Bay Wire Works, James O'Neill Wire Works and Knox felts.

Noble & Wood Issues "The Agitator"

The Noble & Wood Machine Company, Hoosick Falls, N. Y., has just issued the first number of a new periodical publication, "The Agitator". Copies will be mailed to pulp and paper mill executives and key men in the mills throughout the United States and Canada. According to an editorial note in the first issue, it will carry the gossip of the industry, news of new developments of interest, notes on trade conditions and first hand information about new Noble & Wood equipment.

The first issue of the "Agitator" tells in considerable detail about a new and improved type of stock consistency regulator and also the Feeney pressure regulator for jordan engines. The latter is a device which controls the pressure under which stock is refined in the jordan. It is claimed that by the use of this regulator identical refinement of all the fibers is assured. Another article of interest in the initial issue of "The Agitator" is a description of the Noble & Wood experimental mill, a fully equipped mill available to the industry for testing and experimental work. Copies of "The Agitator" maly be had by writing the Noble & Wood Machine Company, Hoosick Falls, N. Y.

E. D. Jones & Sons Co. Laboratory

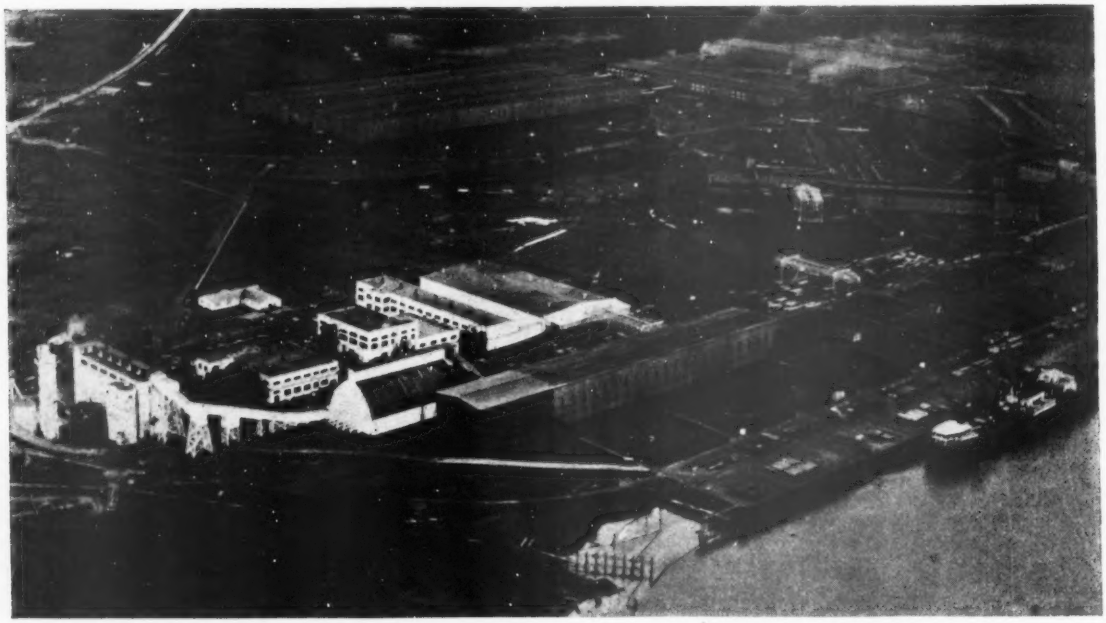
The leading industries of the country have recognized the growing need of maintaining their own laboratories. They realize that supporting institutional laboratories and submitting them their problems is not enough. Here is where their technicians can get their fundamental training. But, to work out the up-to-minute problems, laboratory and factory must work in close conjunction. Frequently the laboratory must handle some very unusual problems, and quickly.

For many years the E. D. Jones & Sons Company of Pittsfield, Massachusetts, have maintained a mechanical labortory, principally for the purpose of making improvements and running tests on their own regular line of machinery and developing new products. Description is found in a new folder just issued.

Their laboratory is regularly equipped with a commercial size beating engine and stuff chest, laboratory beater, jordan, jordan pumps, screen, motors and other equipment. There is ample room to place special equipment that is to be tested. And it is regular practice to install the equipment on which tests are to be run, supplemented, of course, with regular equipment that is installed. This permits a wide range of possibility as to the kind of equipment on which experiments are made.

The E. D. Jones laboratory service is not limited to its own building. The company is pleased to have its men study conditions in the mill, make observations and submit an impartial report on exactly what they find together with any recommendations.

It is true that improvements in processes and equipment are made on a more intensive scale in periods of business depression. This is not a good time for the pulp and paper manufacturer to lose touch with progress in the allied industries.



Aerial Photograph of Weyerhaeuser Timber Co.'s Sulphite Pulp Mill, Longview, Washington
Chris Kuppler's Sons, General Contractors

KUPPLERS' EXPERIENCE

WAS APPLIED TO BUILDING THE WEYERHAEUSER PULP MILL

Contractors For—

WASHINGTON PULP & PAPER CO.
Port Angeles, Wash.

RAINIER PULP & PAPER COMPANY
Shelton, Wash.

GRAYS HARBOR PULP & PAPER CO.
Both Units—Hoquiam, Wash.

NATIONAL PAPER PRODUCTS CO.
Second Unit—Port Townsend, Wash.

OLYMPIC FOREST PRODUCTS CO.
Port Angeles, Wash.

WEYERHAEUSER TIMBER CO.
Longview, Wash.

As general contractors for the new 175 ton bleached sulphite pulp mill recently completed at Longview, Washington, by the WEYERHAEUSER TIMBER Company, CHRIS KUPPLER'S SONS applied more than ELEVEN years of experience in building pulp and paper mills.

By reason of this experience in constructing a number of the Pacific Coast's most modern mills, CHRIS KUPPLER'S SONS are thoroughly qualified for handling the industry's most difficult building jobs.

O. A. KUPPLER W. R. KUPPLER H. B. KUPPLER

CHRIS. KUPPLER'S SONS

SPECIALIZING IN PULP & PAPER MILL CONSTRUCTION

GENERAL BUILDING CONTRACTORS

Established 1889

General Offices: PORT ANGELES, WASH.

Western Forestry Group to Meet

The Western Forestry and Conservation Association on March 7, 8 and 9, in Portland, will hold its annual Forest Management Conference of western forest interests. Federal, state, Canadian and private agencies will be represented.

While some economic problems under consideration by the Timber Conservation Board will be discussed, including taxation of mature timber, stabilization of forest industry, and the future of burdensome forest land, the conference will be devoted more fully than usual to practical problems of protection, with more opportunity for round table discussion by field men.

Among such topics already creating much interest are dealing with incendiarism, emergency protection of young growth in spring and fall, control of sportsmen's and recreationists' careless forest use, new plans for insect control, and certain striking evidence collected on variation of fire hazard which has direct bearing on forest investment, protection and possible insurance.

Salem Converting Plant Adds Equipment

Two machines equipped to turn out thousands of cellophane bags a day have been ordered and will be installed by the Western Paper Converting Company at Salem, Oregon. The machines have been purchased. When installed they will be the only cellophane bag equipment on the coast.

One of the big orders the company is working on now is for more than 1,000,000 "blue books" for the associated student body store at the University of California at Los Angeles. The "blue books," as known to most college students, are used for writing examinations. The U. C. L. A. book has a blue cover upon which is pictured a campus building. The book contains ruled paper.

The company recently shipped two different orders of typewriter paper to New York. Each order contained 60,000 pounds of paper.

Bob Scanlon Joins Benedicts

Robert H. Scanlon, assistant resident manager and dierctor of the Powell River Company, Ltd., was married to Miss Mary Alfreda Murray at Vancouver, B. C., on December 5. Following the ceremony the couple sailed on the stately liner Empress of Japan for a honeymoon tour of the Orient. Miss Murray has for some time been on the staff of the Powell River Hospital.

Mr. Scanlon is one of the better known executives in the Pacific Coast pulp and paper industry. His connection with the Powell River Company dates back to 1910 when soil was first turned in starting the British Columbia development which has grown in the two decades to be the Pacific Coast's largest individual mill, having a daily capacity of 650 tons of newsprint. Mr. Scanlon has, for a great portion of the time, been active in resident executive duties at the mill site.

I. P. Revises 1932 Newsprint Contract Price

International Paper Company announced in December that its price for the year 1932 will be $53 a ton in New York and Chicago. Other representative prices are $52.50 at Boston; $53.00 at Norfolk, Jacksonville, New Orleans and Houston; $56.00 at Atlanta and $60.00 at San Antonio.

Leon Steenbock, Cromwell Paper Co., Chicago, accompanied by Mrs. Steenbock, was a recent visitor to Los Angeles.

New Directory of Canadian Industry

Who's who and what's what in pulp and paper manufacturing in Canada is ably set out in a new "National Directory of Canadian Pulp and Paper Industries" just published by the National Business Publications, Ltd., Gardenvale, Quebec, the same organization that publishes the Pulp and Paper Magazine of Canada.

The volume has a wealth of current statistics on the Canadian industry such as plant investment, payroll, production and exports by grades. Other pertinent information includes data on forest resources, water power, associations. Detailed information on each Canadian mill is presented, giving such information as key personnel, principal equipment, grades, etc.

There are also classifications of mills according to product, list of paper converters, distributors, merchants, rag and paper stock dealers, etc.

The volume is no doubt the best and most convenient source of information on the huge Canadian industry. Publication was undertaken as a service to the pulp and paper industry and information contained therein has been selected and compiled with the approval and cooperation of the industry's executives.

The volume is handsomely bound. Copies are available at $5.00 each from the publisher.

Canada Shipping Flour in Paper Bags

Canadian bakers are taking readily to flour shipments packed in Bates Valve multi-wall paper bags. The potential outlet for new paper tonnage offered by the flour mills has long been beheld with a covetous eye by the paper makers, and regarded, no doubt, as an eventual probability, but now the Canadians are doing it. The move no doubt will spread, judging by early reports on results.

The Copeland Flour Mills, Ltd., at Midland, Ontario, have during the last half of 1931 shipped approximately 100,000 bags for Eastern Canadian distribution.

The present bag being used, which was developed by Bates, holds 98 pounds of flour. It is a four-wall bag, with an outer ply of 50 lb. basis and three inner plys of 40 lb. basis. The bag is the gussetted, sewed end variety commonly used for cement. Dimensions are 18" by 4" by 37¾". A thousand bags requires about 759 pounds of kraft paper.

Many advantages are claimed for the paper bag. As the consumer—in this case mainly the commercial baker—is the one who must be satisfied if the scheme is to be successful, it is logical to inquire into benefits that the paper flour bag holds for him. It is claimed that sanitation is greatly improved with the close-fibred paper bag; there is greater protection against loss of moisture; greater assurance against absorption of outside moisture; elimination of loss of flour due to sifting; elimination of loss of flour thru retention in the container fabric when emptying; and better storage in less space.

It is reported that other flour mills are soon to adopt the paper bag. The next major point of attack is the household flour consumer. To meet the domestic market a 49-pound bag is being developed. This bag is more attractive in appearance, has a bleached kraft outer ply, natural color middle ply, and blue liner.

Low Eastbound Water Rate On Paper

The Luckenbach Steamship Company, Inc., announces that the following Gulf Eastbound emergency rate has been authorized extended to March 31, 1932:

Sulphite or kraft wrapping paper, for remanufacture, in rolls 20 inches or over in diameter—40c per 100 lbs., minimum 50-ton lots, from Pacific Coast Terminal Ports to Gulf Terminal Ports.

New 175-Ton Bleached Sulphite Pulp Mill, Completed in November, 1931, for the Weyerhaeuser Timber Co., Longview, Wash.

Designed for ECONOMICAL PRODUCTION

OF HIGH GRADE + + + BLEACHED SULPHITE PULP

Also designer of and supervising engineer for the construction of the Olympic Forest Products Company's bleached sulphite pulp mill at Port Angeles, Washington. Completed in July, 1930.

The ability of the new WEYERHAEUSER bleached sulphite pulp mill to produce the highest quality pulp economically, was engineered into it by careful planning prior to the beginning of construction.

The best of operating experience was coordinated with the most modern engineering practice, resulting in a mill capable of producing at low cost a uniform pulp of excellent color, great strength and of exceptional cleanliness.

O. C. SCHOENWERK

DESIGNING and CONSULTING ENGINEER

1436 SCOTT AVENUE **WINNETKA, ILLINOIS**

News Print Production—November, 1931

The News Print Service Bureau's Bulletin No. 167 states that production of news print paper in Canada during November, 1931, amounted to 175,643 tons and shipments to 173,601 tons. Production in the United States was 94,149 tons and shipments 93,723 tons, making a total United States and Canadian news print production of 269,792 tons and shipments of 267,324 tons. During November, 23,987 tons of news print were made in Newfoundland and 826 tons in Mexico, so that the total North American production for the month amounted to 294,605 tons.

The Canadian mills produced 286,247 tons less in the first eleven months of 1931 than in the first eleven months of 1930, which was a decrease of 12%. The output in the United States was 118,218 tons or 10% less than for the first eleven months of 1930. Production in Newfoundland was 6,858 tons or 3% more in the first eleven months of 1931 than in 1930 and in Mexico 1,054 tons more, making a continental decrease of 396,553 tons or 10%.

During November the Canadian mills operated at 56.8% of rated capacity, United States mills at 65.6%, Newfoundland mills at 98.5% and Mexican mills at 46.5%, making a continental average of 61.5%. Stocks of news print paper at Canadian mills totalled 48,735 tons at the end of November and at United States mills 32,398 tons, making a combined total of 81,133 tons which was equivalent to 4.5 days' average production.

North American Production

	Canada	United States	Newfoundland	Mexico	Total
1931—November	175,643	94,149	23,987	826	294,605
11 months	2,033,121	1,064,711	270,469	13,971	3,382,272
1930—11 months	2,319,368	1,182,929	263,611	12,917	3,778,825
1929—11 months	2,495,628	1,274,486	234,377	17,403	4,021,894
1928—11 months	2,173,498	1,293,663	212,071	15,257	3,694,489
1927—11 months	1,900,513	1,365,988	185,263	12,882	3,464,646
1926—11 months	1,714,020	1,542,415	169,256	11,898	3,437,589
1925—11 months	1,385,234	1,393,637	83,240	11,695	2,873,806
1924—11 months	1,240,652	1,359,520	59,404	10,538	2,670,114

Higher Freight Rates Not Welcome

C. B. Richards, traffic manager of Hawley Pulp & Paper Company, looks for the paper manufacturers to get together in an effort to secure the elimination of the surcharge imposed by the Interstate Commerce Commission in its decision on the 15% railroad rate case.

As far as the coast lines are concerned, Richards sees little hope for them to get any paper mill business unless this sur-charge, effective January 4, is removed, as the mills can avoid it by shipping via truck and water.

IMPORTS OF PULP WOOD AND WOOD PULP INTO THE UNITED STATES BY COUNTRIES AND CUSTOMS DISTRICTS

October, 1931

Compiled by the U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce
(Figures Subject to Revision.)

PULP WOODS

	Rough				Peeled				Rossed			
	Spruce		Other		Spruce		Other		Spruce		Other	
	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars
COUNTRIES—												
Sov. Rus. in Eur.					6,306	89,862			338	4,812		
Canada	14,776	147,143	1,317	9,318	59,516	626,811	16,306	157,787	827	9,105		
Total	14,776	147,143	1,317	9,318	65,822	716,673	16,306	157,787	1,165	13,917		

Total Imports of Pulpwood, October, 1931—99,386 Cords—$1,044,838.

WOOD PULP

	Mechanically Ground				Chemical Unbleached Sulphite		Chemical Bleached Sulphite		Chemical Unbleached Sulphate		Chemical Bleached Sulphate		Soda Pulp, Unbleached and Bleached	
	Unbleached		Bleached											
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
COUNTRIES:														
Austria							280	13,072						
Czechoslovakia					268	8,887	1,023	51,725						
Estonia					18	400								
Finland	248	6,574	100	3,054	7,597	348,277	460	25,063	4,501	141,614	93	4,322		
Germany					4,569	195,433	4,737	232,613	102	2,928				
Norway	175	3,789	225	5,077	617	23,307	1,934	78,388	315	10,103				
Sweden	330	8,043	700	17,539	26,680	1,101,966	2,718	126,946	17,440	540,218				
Yugo. and Albania					547	17,053								
Canada	17,724	382,397			7,038	275,257	14,892	884,566	5,037	240,141	1,894	170,005	78	4,135
Total	18,477	400,803	1,025	25,670	47,334	1,970,580	26,044	1,412,373	27,395	935,004	1,987	174,327	78	4,135
CUSTOMS DISTRICTS—														
Maine and New Hampshire	3,201	90,518	100	3,054	4,872	210,331	3,345	185,122	1,346	38,696				
Vermont	991	22,944			432	15,042	1,252	69,395	2,517	170,188	1,484	134,924	78	4,135
Massachusetts	38	1,728			2,854	113,333	4,618	203,228	4,863	163,883	93	4,322		
St. Lawrence	1,072	30,159			649	24,685	3,195	189,926			27	2,507		
Rochester							35	1,398						
Buffalo	478	10,270			1,777	77,022	868	63,928	15	666				
New York	282	6,899	200	4,406	10,608	427,574	1,275	70,706	3,038	94,627				
Philadelphia	2,290	56,536	150	3,350	6,487	283,145	2,561	121,216	651	24,303				
Maryland	225	5,293	25	583	9,410	410,693	1,513	79,542	4,152	121,678				
Virginia					2,289	107,617	429	22,745	2,872	77,365				
Mobile					61	1,934								
New Orleans			50	1,037	103	3,485			910	28,493				
Los Angeles			500	13,240	250	4,458			95	3,426				
San Francisco									110	2,355				
Washington					214	6,989	142	6,535						
Dakota	509	8,418					231	11,167	316	10,651				
Duluth and Superior	454	11,940			20	537								
Wisconsin	722	21,663			4,732	193,860	756	30,370	6,423	192,988				
Michigan	8,215	134,435			2,123	68,569	5,824	357,095	87	5,685	383	32,574		
Chicago					453	21,306								
Total	18,477	400,803	1,025	25,670	47,334	1,970,580	26,044	1,412,373	27,395	935,004	1,987	174,327	78	4,135

Total Imports, All Grades of Wood Pulp, October, 1931—122,340 tons—$4,922,892.

ORR

We firmly believe

that we are producing felts, which can be demonstrated by trial, that will give good finish, water removal, and long life.

The constant demand for low cost per ton and good finish, has spurred us to use our best efforts to produce felts that will meet the conditions put upon them, and to convince our customers of their superiority in operation upon their machines.

A trial will surely convince ORR FELT USERS that they are making progress along the lines demanded, and in the right direction.

The Orr Felt & Blanket Co.
PIQUA, OHIO

GEO. S. MEDDIS,
1824 Beach Street, San Francisco, California
Pacific Coast Representative

FELTS

The Paper and Pulp Industry in October, 1931

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in October decreased 5% under September and 9% under October, 1930. The daily average wood pulp production in October was 3% below September, 1931, and 10% below October, 1930.

Compared with October a year ago, the daily average production registered a decrease in the following grades: Newsprint, uncoated book, paperboard, wrapping, writing, tissue, hanging and building papers. Compared with September, 1931, the following percentage decreases were registered in the daily average production: Newsprint, 1.5%; uncoated book, 4.8%; paperboard, 5.9%; bag, 4.4%; wrapping, 5.8%; writing, 2.7%; tissue, 12.4%; and building, 21.1%.

The ten months' cumulative total of production of paper was 9.5% below the corresponding period in 1930 while shipments were 8.7% smaller than a year ago. Newsprint, wrapping and bag papers have shown improvement while uncoated book, paperboard and writing papers showed practically no change in production at the end of the ten-month period as compared with the end of the nine-month period.

The ten months' cumulative total of wood pulp production for this year was reported as 15.6% below the level of the same period in 1930.

Total shipments of wood pulp to the outside market were 29.7% below the level of the ten months' total of 1930. Bleached sulphite, mitscherlich sulphite and kraft pulp shipments to the open market were greater than in the first ten months of 1930.

Total wood pulp inventories showed a decrease and at the end of October were 10.1% below the level of October, 1930. All grades, excepting news grade and easy bleaching pulp, showed inventories below the level of October, 1930.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF OCTOBER, 1931

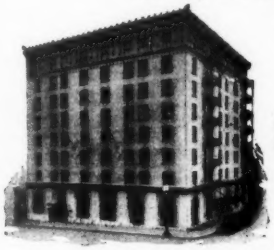
GRADE—	Production Tons	Shipments Tons	Stocks on Hand End of Month—Tons
Newsprint	97,117	98,616	31,933
Book, Uncoated	67,358	68,826	45,588
Paperboard	166,221	167,108	56,770
Wrapping	41,808	41,069	46,351
Bag	12,758	12,790	4,928
Writing, etc.	22,234	23,255	*43,597
Tissue	5,700	5,712	3,787
Hanging	3,337	3,541	2,917
Building	5,056	5,058	3,146
Other grades	15,607	16,305	13,510
Total all grades Oct., 1931	437,196	442,280	232,547
Total all grades 10 mos., 1931	4,380,258	4,386,568	232,547
Total all grades 10 mos., 1930	4,837,830	4,806,063	267,711

*Revised.

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF OCTOBER, 1931

GRADE	Production Tons	Used During Month—Tons	Shipped During Month—Tons	Stocks on Hand End of Month—Tons
Groundwood	68,112	70,067	1,898	49,616
Sulphite, News Grade	26,500	26,890	92	6,159
Sulphite, Bleached	18,540	15,829	2,716	3,078
Sulphite, Easy Bleaching	2,602	2,437	186	1,346
Sulphite, Mitscherlich	3,264	2,706	869	1,519
Kraft Pulp	26,924	22,493	5,029	3,054
Soda Pulp	13,780	10,592	2,896	2,575
Other Grades	531	518	66	156
Total all grades Oct., 1931	160,253	151,532	13,752	67,503
Total all grades 10 mos. 1931	1,684,542	1,541,456	144,855	67,503
Total all grades 10 mos. 1930	1,995,632	1,779,263	206,113	75,104

THE HOTEL CONGRESS
The stopping place in Portland for Pulp and Paper Men



Sixth at Main Street
PORTLAND
OREGON

200 Rooms—200 Baths

Convenient Downtown Location.
Reasonable Rates Prevail

LOUIS E. BOGEL, Resident Manager

Canadian Exports of Pulp and Paper November, 1931

Canadian exports of pulp and paper in November were valued at $11,815,397 according to the report issued by the Canadian Pulp and Paper Association. This was an increase of $149,047 over the previous month.

Wood pulp exports for the month were valued at $2,674,253 and exports of paper at $9,141,144 as compared with $2,644,278 and $9,022,072 respectively in the month of October.

Details for the various grades of pulp and paper are as follows:

	November, 1931		November, 1930	
Pulp:	Tons	Dollars	Tons	Dollars
Mechanical	12,881	329,217	24,671	699,185
Sulphite Bleached	27,164	1,603,081	21,803	1,468,410
Sulphite Unbleached	10,424	407,368	13,616	619,895
Sulphate	4,600	313,438	6,104	370,749
Screenings	907	14,042	1,615	26,512
All Other	140	7,107	173	13,484
	56,116	2,674,253	67,982	3,198,235
Paper:				
Newsprint	171,151	8,801,532	173,149	9,746,067
Wrapping	782	67,889	841	87,880
Book (cwts.)	1,809	14,795	4,645	37,206
Writing (cwts.)	17	171	.....	.....
All Other	.....	256,757	.....	304,220
	.....	9,141,144	.....	10,175,373

For the first eleven months of the year the exports of pulp and paper were valued at $130,113,638. In the corresponding months of 1930 the value was $162,106,864 so that there has been a decrease this year of $31,993,226.

Exports of wood-pulp in the period were valued at $27,662,241 while exports of paper amounted to $102,451,397 as compared with totals of $36,482,433 and $125,624,431 respectively in the corresponding eleven months of 1930.

Details for the various grades are given below:

	11 Mos. 1931		11 Mos. 1930	
Pulp:	Tons	Dollars	Tons	Dollars
Mechanical	145,147	3,094,640	191,584	5,512,843
Sulphite Bleached	242,331	15,129,383	233,616	16,883,975
Sulphite Unbleached	114,998	4,819,762	174,255	8,595,739
Sulphate	73,369	3,240,641	79,787	4,755,110
All Other	16,126	387,815	26,699	734,766
	591,971	26,672,241	705,941	36,482,433
Paper:				
Newsprint	1,846,408	98,944,063	2,105,516	120,811,386
Wrapping	8,977	819,808	12,393	1,298,622
Book (cwts.)	23,141	191,243	37,971	350,166
Writing (cwts.)	1,317	12,174	2,354	19,698
All Other	.....	4,484,109	.....	3,144,559
	.....	102,451,397	.....	125,624,431

Pulpwood exports for the first eleven months of this year were 906,697 cords valued at $8,979,141 as compared with 1,266,198 cords valued at $12,856,340 in the corresponding months of last year.

Japan's Paper Industry
Production and Sale—October, 1931

Printing Paper	Production (lbs.)	Sale (lbs.)
(Superior Quality)	10,870,879	11,404,907
Printing Paper	11,052,755	9,711,576
Drawing Paper	3,215,387	2,567,169
Simili Paper	9,141,584	9,085,664
Art Paper	1,169,368	1,098,905
News Printing	42,655,785	45,954,442
Sulphite Paper	4,015,999	4,080,976
Coloured Paper	1,277,955	1,444,943
Packing Paper	12,299,198	11,225,296
Chinese Paper	1,551,918	823,371
Board Paper	5,631,103	6,343,179
Sundries	5,515,272	4,924,559
Total	108,397,203	108,664,987

Grays Harbor Pulpwood Cutters Strike

Too much pressure on wages to deflate to intolerably low levels is said to be the principal cause of a strike among pulpwood cutters in the Grays Harbor district of Washington. The strike was not general and in some quarters was attributed to the work of Communists. It is estimated that approximately 500 men are presently engaged in cutting pulpwood in the district. Contractors were paying as low as $2 a cord to cutters, while the bottom for day wages was given at $1.50. A $3 minimum on both was sought.

E. D. Corneilson, Salt Lake City representative of the Graham Paper Company, was a recent visitor in Los Angeles.

Wood Pulp Salesman Available

Wishes to make contact with Pacific Coast mill as a direct representative. Operating on the Eastern market, known as New England, New York, New Jersey and Pennsylvania. Having contact with Eastern paper mills and also have contact among Eastern selling agents of paper mill supplies. Have sold for many years foreign wood pulp grades such as Sulphite and Sulphate, unbleached and bleached, and also ground wood. Young executive with the best of references to submit.

Box No. 118, Pacific Pulp and Paper Industry, 71 Columbia St., Seattle, Washington.

Non-Clogging Stock Pump
With Casing Split to Give Easy Access
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